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SNAKE RIVER MANAGEMENT PLAN
GRAND TETON NATIONAL PARK

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AUGUST 1996

96-033289

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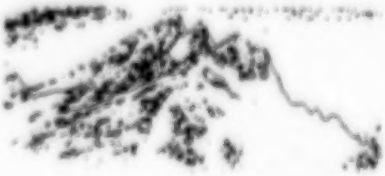
EXECUTIVE SUMMARY



"(The Snake River) has no North American rival combining wildlife and mountain scenery... Riverfront views of the Tetons are perhaps the most classic mountain scene in North America, photographed by millions... The river is both a mirror and window to the rest of the west."

Tim Palmer, Window to the West

EXECUTIVE SUMMARY

This plan sets forth the management philosophy for the Snake River Corridor and provides strategies for addressing issues and objectives based on that philosophy. This picturesque river originates in the highlands of northwestern Wyoming's Teton Wilderness Area, flows west through a portion of Yellowstone National Park, south through John D. Rockefeller Jr. Memorial Parkway and then enters Grand Teton National Park as it flows into Jackson Lake. This plan addresses the 25 mile section of the river that flows east from the Jackson Lake Dam, then south to the park's boundary.

PROJECT SCOPE AND OBJECTIVES

The National Park Service determined that an updated Snake River Management Plan was needed not only to resolve present issues, but to ensure wise choices for future management and use of the river corridor.

This Snake River Management Plan builds upon the goals set forth in the Grand Teton National Park Master Plan and Statement for Management which are discussed in Part One. Once finalized, it will guide National Park Service stewardship of the river corridor. The plan has been designed to achieve the following objectives:

- Identify the biological, cultural and scenic values that define the unique character of the Snake River Corridor.
- Identify key issues to be resolved in this plan.
- Formulate a management framework that responds to the issues and effectively guides National Park Service management of the river corridor.
- Determine the appropriate carrying capacities for visitor use of the river corridor.
- Present alternatives for visitor use of the river corridor.
- Develop a resource monitoring and implementation schedule for the completed plan.

PLANNING ISSUES

The recommendations presented in this plan were largely determined by public input. The planning effort was kicked off by a public workshop in November 1994 where the public identified problems and opportunities they would like the National Park Service (NPS) to address. Based on this initial public input, two subsequent meetings, an open house for float and fishing trip permit holders, and meetings with NPS staff, several key planning issues were identified. These issues, discussed in detail in Part Two, formed the foundation of the planning effort.

Resource Protection

Public comments emphasized the desire to see the river preserved in a natural state in order to protect wildlife and scenic values. Wildlife issues such as eagle nest closures and temporary habitat closures for other species need to be explored. Decline in cottonwood seed regeneration in riparian areas should be explored in light of dam openings and closures. Understanding how fluctuating water levels due to dam operations effect wildlife, particularly fisheries should be investigated.

Access

Current boat launch areas become crowded during the summer months with boaters having to wait in line to launch or exit the river. At some access points, gravel builds up and impedes launch use. The number and location of launch sites need to be reviewed and alterations to the landings evaluated: should there be slip clearance or dredging, alternate locations as the river character changes, or permanent vs. temporary landings designated?

Parking at some launch areas becomes congested and is not well defined. At times, the vault toilets at Deadman's Bar and Pacific Creek have long lines. What level of development is appropriate at the launch areas that will not further impact the riverine environment?

Commercial and Private River Use

The perception exists that the river may become overcrowded in the future. This perception ties in with the often misunderstood concept of carrying capacity.

Carrying capacity means the amount and type of recreational use an area can accommodate without altering either the environment or the user's experience beyond the degree of change deemed acceptable by the management objectives for the area. Carrying capacities are not set according to the composition or volume of current use. Instead, they are the result of management decisions. These decisions in turn determine the type and amount of recreation to be provided.

If use of the Snake River continues to advance at the current rate, there will be increased stress on aesthetic and wildlife resources. This stress will be caused by the growing number of largely unregulated non-commercial and guided fishing boats and increased use of commercial scenic launches.

What is now needed is a reevaluation of carrying capacities for the Snake River, based on scientific recommendations. This reevaluation will then establish updated management objectives for the river, to determine acceptable upper limits of use. In addition to developing new carrying capacities, methods for staying within these limits need to be generated and explored.

THE GOALS OF THE SNAKE RIVER MANAGEMENT PLAN

The basic goals of Grand Teton National Park in the management of the Snake River reflect those of the NPS as expressed in the National Park Service Act of 1916 and the Redwoods Act of 1978. The main objective is to *"...conserve the scenery and natural and historic objects and wildlife therein and to provide for the enjoyment of the same [and] leave them unimpaired...."* These legislative mandates are the driving force behind management decisions effecting NPS areas across the nation. The mandates which apply to this project are:

- To preserve the natural resources and environmental processes of the Snake River corridor and the associated riparian and river environments. To protect the Snake River and its riparian environment from unacceptable change caused by human activities.

- To protect and preserve the historic resources in the river corridor and associated environments.

- To provide Snake River users the opportunity to participate in and appreciate a variety of unique experiences offered by Grand Teton National Park as a whole and by the riverine environment in particular. To provide an opportunity for all participants to enjoy a rewarding river running experience.

- To provide a quality Snake River experience through Grand Teton National Park:

    a) By determining the impact of crowding and use levels on visitor experience.

    b) By then establishing a human use capacity and a limitation on use that protects the river's natural resources and processes.

- To provide opportunities for people of various ages and abilities to participate in river trips.

DESIRED FUTURE CONDITIONS

The conditions listed below form the foundation of the Snake River Management Plan, building upon the goals set forth in Grand Teton National Park's General Management Plan, Statement for Management, and public input. These conditions will serve as the reference point for all programs and activities the NPS will undertake within the river corridor; they establish the standard for resource conditions. The success of this plan can, therefore, be measured by the extent to which it fulfills the following objectives for natural and cultural resources, recreational experience, outfitting and public access and launch sites:

Natural and Cultural

- The natural functions of plants and animals, as they relate to the Snake River, are preserved and enhanced.
- There is adequate baseline data available upon which to make sound management decisions.
- Wildlife habitat for threatened, endangered, and sensitive species is identified and protected.
- Deer, elk, moose, otter, beaver, osprey, waterfowl, raptors, amphibians, and a variety of songbirds can be observed in their natural environments.
- The bald eagle population is not adversely affected by river use.
- The fishery in the river is stable and thriving.
- The effects of the dam and water flow on the river system are understood and controlled to protect both the natural resources as well as the recreational experience in the river system.
- Water quality is regularly monitored and remains high.

Recreational Experience

- Recreation opportunities such as scenic floating and fishing are provided for within the Snake River Corridor, where consistent with natural resource preservation.
- A variety of options are available to float the river; private boats, commercial tours, rental boats, and fishing guides.
- All private users are aware of river conditions and the skills required to safely complete the float.

Outfitting

- Commercial trips are planned to avoid congestion at launch sites.
- Outfitters share river use responsibly, and help clients gain a better appreciation of river resources and ethics through educational and instructional trips.

- There is no illegal outfitting.

Launch Sites

- Launch sites are organized, with adequate parking and launch facilities. The sites are uncongested but not overdeveloped.

The Five Alternatives

Common Guidelines for All Five Alternatives

While factors relating to each alternative vary, each is roughly divided into three sections; recreational use, launch areas and natural resources. Regardless of which alternative is selected, there are a number of guidelines which are presently, and will continue to be, in effect. These guidelines include:

- Existing closures to protect wintering and nesting wildlife;

- On-going wildlife monitoring efforts;

- Safety regulations and licenses, for river users;

- Yearly boat registration for non-commercial river users;

- Operational and administrative requirements for commercial boating and fishing companies;

- Commercial use permits and regulations will be in effect anytime the river is open to the public;

- Routine maintenance, such as garbage collection and maintenance of privies, roads, and launch areas;

- All law enforcement regulations such as prohibitions on off-road driving and overnight camping.

- The Pacific Creek launch site will be stabilized (Water has undercut the bank so severely at Pacific Creek landing that the boat launch has become unstable and difficult to use. Further engineering and hydrology studies will be needed following the completion of this plan to determine what actions are necessary. In addition, the parking area at Pacific Creek will be stripped to better define parking.);

- Required actions outlined in other park management plans, such as the Human/Bear Management Plan, the Grazing Management Plan, or the Natural Resources Management Plan.;

- A removable walkway system will be developed to be used when the river is low (This will make walking on the cobbles easier for visitors and reduce safety concerns). Investigation and research needs to be conducted by park landscape architects to determine the most appropriate system, design and materials.);

- No motorized craft allowed on the river;

- Equipment requirements will continue for commercial outfitters and be implemented for private users (refer to appendix one for a complete description of minimum equipment requirements;

- A commercial shuttle service will be available for private river users.

Alternative One, or "no action" Highlights

Recreational Use

- Recreational use, both commercial and private would continue at present authorized levels. This would provide for the possibility of 104 commercial scenic trips per day, which is a 48% increase over 1995 use levels.

- In line with current policy, there would be no limitations placed on existing guided fishing operations.

- Growth of non-commercial recreational use would remain unrestricted, except by the physical constraints of the launch areas and parking lots.

Launch Areas

- Except for routine maintenance, no improvement would occur at the launch areas.

- Mechanical removal of portions of in-stream gravel bars would be limited to 25 cubic yards or less in compliance with the US Army Corps nation-wide permit.

Natural Resources

- Existing closures would remain in effect to protect wintering and nesting wildlife and spawning fish. Efforts to monitor activities for nesting eagles, herons, osprey, trumpeter swans, raptors, and amphibians would continue at present levels.

- Water levels in the river would be managed as they are now.

Alternative Two Highlights

Recreational Use

- Commercial scenic float use levels of the riparian areas would be capped at 78 permitted launches per day. This would allow for a 10% increase over 1995 use levels.

- Guided fishing use would be capped at 14 launches per day, also a 10% increase over 1995 use levels.
- One of the issues identified in the planning process was crowding at launch areas. Field observations during the 1995 operating season revealed that most of the crowding occurs when several commercial operators use the areas simultaneously, or when large private or commercial groups are launching. Congestion occurred between 9 and 10 a.m., and between 1 and 2 p.m., for launching and down river at the take outs. The majority of time, the launch areas were vacant. Better scheduling to distribute use throughout the day, and limiting commercial launches to 3 boats per group, could help alleviate many crowding conflicts. This alternative varies concessionaire use of launches and take-out areas and spaces out launching times throughout the day on a voluntary basis.

- If use levels remain consistent or drop, no restrictions would be made on growth of non-commercial recreational use other than the physical constraints of the launch areas. Private use would not be limited in any way other than by lack of developed facilities. If use exceeds the standards defined in chapter 5, limits on private use would be explored.

Launch Areas

- Under Alternative Two, changes would be made to launch areas in addition to Pacific Creek landing to alleviate congestion and reduce resource impacts. Gravel removal in excess of 25 cubic yards is proposed at Pacific Creek, Deadman's Bar and Moose landings to allow boat launching and landing when gravel accumulates. If this alternative is selected, appropriate permits would be required from the Army Corps of Engineers and State Department of Environmental Quality. Discussions of launch areas are conceptual in this plan. If this alternative is selected, site specific design work would have to be completed with additional environmental analysis.

Jackson Lake Dam

- During the 1980s, when the Jackson Lake Dam was reconstructed, the area now used for parking and boat launching was the construction staging area. At that time, a schematic site plan was developed to rehabilitate much of the disturbed area while providing access to the river. While this plan was only partially implemented, the concepts developed are still valid. Therefore, this alternative proposes to adopt that conceptual design. The intent of the design was to provide pedestrian access to the river for a variety of uses including fishing, walking, picnicking or just sitting and enjoying the environment. Parking for vehicles would be provided in the area just north of the river which has tree's for shade and provides some separation from the river bank. A walkway would be built to provide easy access from the parking lot to the river. In addition, access would be provided for the loading and unloading of small boats.

Cattleman's Bridge

Launch/Parking: This alternative proposes to maintain the primitive environment at cattleman's bridge but develop an accessible launch site for those wishing to explore the Oxbow area. The intent is to keep development at the site to a minimum. The topography provides easy access to the river with minimal environmental effect; this site is appropriate for the disabled because users can launch and return to the same spot. Configuration and use of Cattleman's bridge launch would continue as it exists currently. Minor changes would include delineation of circulation and parking with rock, wood bollards and barrier logs. An area would be provided for backing more efficiently to the river access. Areas not necessary for circulation and parking would be revegetated.

Bridge: The bridge poses a serious safety hazard. This alternative proposes to remove most of Cattleman's bridge, except for a small section which extends over the river, and the northern abutment of the bridge. This would allow fisherman and wildlife observers to continue to use the bridge, but leave most of the river channel clear. Partial removal preserves an element of the bridge and provides a tangible reminder of the early ranching days in Jackson Hole. The remaining section of the bridge would be stabilized.

Access Road: There is limited site distance at the junction of the access road to cattleman's bridge and the main road. This road will either be realigned or the small hill at the junction will be graded back to improve the site distance for those entering the main highway.

Deadman's Bar

- The use patterns at Deadman's Bar would remain unchanged. The addition of bollards and horizontal logs would provide better delineation of the parking area. In addition, the approach on the north end of the parking lot would be expanded slightly to accommodate van/trailer temporary parking for those waiting to access the launch ramps.

- Restroom facilities would be developed to replace the existing outhouses.

Schwabachers Landing

An upgraded lot is proposed for Schwabachers Landing, to enhance vehicle circulation and parking. This alternative redesigns the entire parking and circulation scheme for a loop of counter clockwise traffic flow. Horizontal logs would delineate vehicle parking on the western edge of the upper lot (right side of the plan) while allowing to the east traffic flow and a waiting/staging parking area for vehicles with trailers. The lower lot, adjacent to the river would be a double wide lane that allows for temporary parking as well as thru traffic. Again, vertical logs and placed boulders would define vehicle boundaries .

Moose Landing

- This alternative proposes no changes in the Moose landing and parking area.

RKO Landing

- Under this alternative, minor improvements to the road would be proposed to reduce the number of deep potholes in the roadbed. Minor improvements would be made to eliminate potholes in the parking area. No increase in current use is proposed and no commercial use of this site would be permitted.

Worm Hole

- This alternative proposes to widen the parking area slightly to allow for head-in parking on the eastern edge of the lot. Parking would be delineated by horizontal log parking blocks, and the lot would be delineated by a combination of vertical log bollards and placed boulders. A "hammerhead" backing area would be added to assist in pulling out of the parking spaces.

Natural Resources

Alternative Two would handle natural resources the same way as Alternative one, with the following exceptions:

- A system would be developed and implemented to monitor effects of visitor use on vegetation. A revegetation plan would be developed to mitigate any changes to vegetation from visitor use. Trails at the launch areas would be clearly defined to eliminate the use of undesignated trails.

- Grand Teton National Park would continue to work with the Bureau of Reclamation on the Minimum Stream flow Study now under way to understand and mitigate the dam's effect on water flows as it relates to recreation, hydrologic process, fisheries and water quality.

- The water quality monitoring program would be continued.

- A research and monitoring program would be developed to gather information on river otter population and how visitors effect that population.

- A research and monitoring program would be developed to determine how lack of flushing flows due to the dam effect cottonwood communities.

Alternative Three Highlights

Recreational Use

Commercial use of riparian areas would continue, with the following provisions:

- The reserve allocation system would be abolished and permitted levels of daily launches would be allowed at 1995 levels. This would cap daily scenic float launches between Jackson Lake Dam and Moose at 70, and between Moose and Wilson at 3.

- Scenic concession float trips would be assigned specific launch times and locations during the day designed to spread out use and reduce congestion. Exact times and launch locations would be determined in the concession operating plan.

- Scenic float trip concessionaires would no longer be allowed to park their vans and trailers at the boat launches.

- Use of rafts that require special put-in or take-out facilities would be phased out over a five year period. This would open up additional ramps at Moose to both commercial and private users.

- All concession-operated riverside picnic sites would be removed and rehabilitated. These sites are presently located at Schwabacher Landing, Deadman's Bar, and across the highway from the Triangle X Ranch. The picnic sites were originally developed when the majority of river trips floated from Pacific Creek to Moose. This was a much longer trip than is taken today, so the need for food to be provided on these trips is no longer necessary.

- Commercial fishing would be capped at 1995 use levels, allowing for 13 launches per day.

Non-commercial use would comply with the following:

- In order to further protect wildlife, the Oxbow Bend would be closed to boating except for the main channel of the Snake River.

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- The upper Bar B C spring creek would close to fishing and a spawning habitat restoration project would begin, as recommended by the Wyoming Game and Fish Department (see Appendix 2).
- A monitoring system would be developed and put in place. When non-commercial use exceeds standards outlined in chapter 5, a permit system would be put in place limiting the number of private boaters allowed on the river per day.

Launch Areas

Alternative Three proposes the same changes to the launch areas as Alternative Two, with the following exceptions:

- Mechanical removal of in-stream gravel bars would be limited to 25 cubic yards or less.
- The bridge, launch area and road to Cattleman's Bridge would be removed and rehabilitated. This site is located in sensitive wildlife habitat and removal would reduce habitat damage from visitors.
- This alternative proposes minimal upgrades to Schwabacher's landing by "cleaning-up" the configuration of parking and circulation. Barrier logs would define the parking spaces, while vertical log bollards and placed boulders would define the vehicle boundaries.

Natural Resources

- The wildlife monitoring program presently in effect for great blue herons, bald eagles, trumpeter swans, osprey, and amphibians would expand to include species of wildlife such as piscivorous (fish-eating) birds and river otters. Vegetation, soil erosion, and water flows would also be monitored. The area of the upper Bar B C spring creek would be closed to fishing, and a spawning habitat restoration project would begin, as recommended by the Wyoming Game and Fish Department (See Appendix 2). Once pertinent data is collected, additional closures along the river bank would be proposed to protect habitat for a variety of species including: osprey, eagles, great blue herons, moose, elk, bear, river otters and other nesting birds.

Alternative Four Highlights

This alternative proposes to modestly increase permitted use.

Recreational Use

- Commercial scenic float use levels of the riparian areas would be capped at 115 permitted launches per day. This would allow for a 10% increase over existing permitted use levels, or an estimated 64% increase over 1995 use levels. In addition, guided fishing use would be capped at 17 launches per day, a 30% increase over 1995 use levels. Specific numbers of launches per company would be defined within the concessions operating plan and within each company's individual use allocation. The reserve allocation system would no longer be used. No additional commercial operations ,(i.e. float trip or fishing concession permits), would be authorized.

- Scenic concession float trips would be assigned specific launch times and locations designed to spread use throughout the day and reduce congestion due to increased use. Exact times and launch locations would be determined in the concession operating plan.
- Scenic float trip concessioner's and fishing guides would no longer be allowed to park their vans and trailers at the boat launches.
- There would continue to be no restrictions on private use if growth does not exceed 20% over 1995 use levels. If use exceeds this or the exceeds standards defined in chapter 5, limits on private use would be explored.
- Rules concerning designated launching, landing and lunch stops would continue with the following exception. There would be no stopping and disembarking allowed on the river by any commercial operation, including fishing guides.
- Passenger Meeting Points: Passengers may not be met on any lands under the jurisdiction of the National Park Service. Passengers may be met at lodging concession facilities within the park, only if prior arrangements are made with the concessioner.

Launch areas

Alternative Four proposes the same changes to the launch areas as Alternative Two.

Natural Resources

Alternative Four proposes the same actions concerning natural resources as Alternative Two.

Alternative Five Highlights:

This alternative proposes to divide the river segments into zones representing different types of visitor experiences.

Recreational Use

This alternative defines use levels for the following segments of the river:

Jackson Lake Dam to Pacific Creek Landing: The experience of floating from Jackson Lake Dam to Pacific Creek would be a solitary wilderness experience. Visitors would see few, if any other boats on this segment. Use would be restricted to private user's only. If use levels remain consistent or drop, no restrictions would be made on private user's. If use exceeds the standards defined in chapter 5, limits on private use would be explored.

Pacific Creek to Deadman's: Floating this section of river would remain a wilderness experience. However some encounters with other floaters or fisherman would be expected. Commercial scenic float trips would be capped at 14 launches per day, which is a 7% increase over 1995 levels. Guided fishing trips would be capped at 6 launches per day. As in the above section, if private use exceeds the standards defined in chapter 5, limits on private use would be explored.

Deadman's to Moose: Floating this section of river would be a scenic recreational experience. Frequent encounters with other floaters and fishermen would be expected. Commercial scenic float trips would be capped at 56 launches per day and guided fishing trips would be capped at 8 launches per day. This is a 30% increase over 1995 use levels . As in the no-action alternative, there would be no restrictions on private floaters, except perhaps the lack of developed facilities.

Schwabackers to Moose: Floating this section would be similar to the above. Commercial scenic float trips would be capped at 11 launches per day, a 30% increase over 1995 use levels.

Moose to Wilson: Floating this section would continue to be a solitary experience. Floaters can expect to see few others along their trip. Commercial scenic float trips would be capped at 5 per day, a 40% increase over 1995 levels. Fishing of this section would be unrestricted, except by regulations imposed by Wyoming Game and Fish.

Actions common to all river sections:

- Rules concerning designated launching, landing and lunch stops would continue with the following exception. There would be no stopping and disembarking allowed on the river by any commercial operation including fishing guides.

- Passenger Meeting Points: Passengers may not be met on any lands under the jurisdiction of the National Park Service. Passengers may be met at lodging concession facilities within the park only if prior arrangements are made with the concessioner.

- Scenic concession float trips would be assigned specific launch times and locations during the day designed to spread out use and reduce congestion due to increased use. Exact times and launch locations would be determined in the concession's operating plan.

- Scenic float trip concessioner's and fishing guides would no longer be allowed to park their vans and trailers at the boat launches.

- Total launches under this alternative would be 86 per day or a 23% increase over 1995 use levels.

Launch Areas

Alternative Four proposes the same changes to the launch areas as Alternative Two.

Natural Resources

Alternative Four proposes the same actions concerning natural resources as Alternative Two.

Comparison of the Alternatives

	Alternative One	**Alternative Two**	**Alternative Three**	**Alternative Four**	**Alternative Five**
Use Levels					
- Guided Scenic	104 launches/day; 48% increase over 1995 levels.	78 launches/day; 10% increase over 1995 levels; no reserve allotment; voluntary scheduling to reduce congestion at launch areas.	70 launches/day; no increase over 1995 levels; no reserve allotment; mandatory scheduling to reduce congestion; no extended parking at launch areas; rafts that require special facilities phased out; no picnic stops.	115 launches/day; 10% increase over exisiting permitted levels or 64% increase over 1995 levels; no reserve allotment; mandatory scheduling.	Jackson Lake Dam to Pacific Creek: no use; Pacific Creek to Deadmans: 14 launches/day; Deadmans to Moose: 56 launches/day; Swabackers to Moose: 11/day; Moose to Wilson: 5/day.
- Guided Fishing	No use limits.	14 launches/day.	13 launches/day; no extended parking at launch areas.	17 launches/day; no extended parking at launch areas.	Jackson Lake Dam to Pacific Creek: no use; Pacific Creek to Deadmans: 6/day; Deadmans to Moose 8/day; Moose to Wilson: no restrictions.

	Alternative One	Alternative Two	Alternative Three	Alternative Four	Alternative Five
• Private	No use limits.	No use limits until standards are exceeded.	No use limits until standards are exceeded; Oxbow Bend except main channel closed.	Same as Alternative Two.	Same as Alternative Two.
Launch Areas	Dredging not to exceed 25 cubic yards.	Dredging to exceed 25 cubic yards, individual permit will be requested from Army Corps.	Same as Alternative One.	Same as Alternative Two.	Same as Alternative Two.
• Jackson LakeDam	Existing conditions.	Remove parking adjacent to river.	Same as Alternative Two.	Same as Alternative Two.	Same as Alternative Two.
• Cattlemans	Existing conditions.	Remove most of bridge; develop accessbile launch; improve parking delineation; improve site distance for entering main highway.	Remove bridge , launch site and access road. Restore to natural condition.	Same as Alternative Two.	Same as Alternative Two.
• Pacific Creek	Further engineering and hydrology studies needed.	Same as Alternative One.	Same as Alternative One.	Same as Alternative One.	Same as Alternative One.

	Alternative One	**Alternative Two**	**Alternative Three**	**Alternative Four**	**Alternative Five**
• Deadmans	Existing conditions.	Use patterns unchanged; better delineation of parking; slight widening of approach.	Same as Alternative Two.	Same as Alternative Two.	Same as Alternative Two.
• Moose	Existing conditions.	Existing conditions.	Existing conditions.	Existing conditions.	Existing conditions.
Commercial					
Passenger Meeting Points	Existing conditions.	Existing conditions.	Existing conditions.	Passengers may not be met on NPS lands, but may be met at lodging concession facilities.	Passengers may not be met on NPS lands, but may be met at lodging concession facilities.
Commercial Launch Times & Locations	Existing conditions.	Existing conditions.	Commercial scenic float trips assigned specific launch times and locations.	Commercial scenic float trips assigned specific launch times and locations.	Commercial scenic float trips assigned specific launch times and locations.
Commercial Parking at Launches	Existing conditions.	Existing conditions.	No long term parking by scenic float trips.	No long term parking by scenic float trips or guided fishing trips.	No long term parking by scenic float trips or guided fishing trips.

ORGANIZATIONAL FRAMEWORK

Information presented in this document is organized into five sections;

Part One: Introduction. This section contains a general summary of the natural history of the Snake River Corridor, a justification for an updated Snake River Management Plan and an overview of past legislation and planning pertaining to the area.

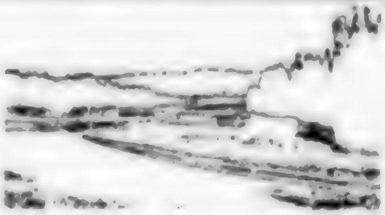
Part Two: Planning Issues. This section identifies the issues related to the corridor and describes management objectives for this plan.

Part Three: Resource Overview and Existing Conditions. This section chronicles the existing conditions on the river and the resources present in the corridor.

Part Four: Plan Alternatives. This section identifies the alternatives developed to resolve the issues.

Part Five: Indicators, Standards & Monitoring. This section discusses the concept of carrying capacity and defines indicators and standards relating to the desired future conditions. It also outlines future monitoring and research needs.

PART ONE, INTRODUCTION



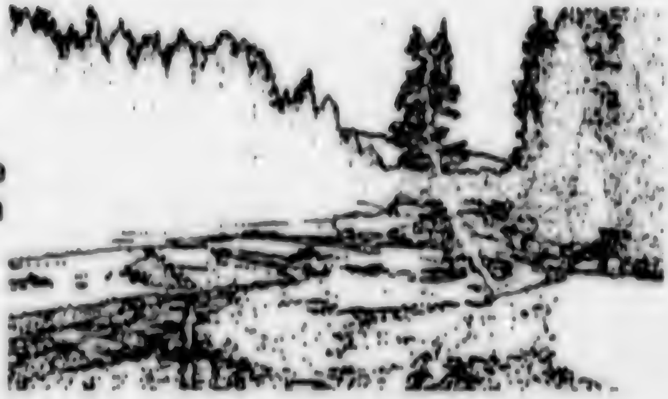
"Water is inspiration, recreation and refreshement to humans. The wonders of waterfalls, springs and geysers, and the pleasures of swimming, rafting, hiking, fishing and boating park lakes and streams, draw and delight park visitors." - Park Waters in Peril, National Park's and Conservation Association.

PART ONE, INTRODUCTION

Grand Teton National Park consists of approximately 310,000 acres in northwestern Wyoming's Teton County. Bordered by two national forests, the John D. Rockefeller Jr. Memorial Parkway and Yellowstone National Park, Grand Teton National Park occupies a central position in the 13.3 million acres of federally-owned land referred to as the Greater Yellowstone Area.

The intent of this updated Snake River Management Plan is to provide the National Park Service with direction for long-range management of the Snake River Corridor from the Jackson Lake Dam to the park's south boundary. The northern section of river from the south boundary of Yellowstone to Jackson Lake will be addressed in a subsequent plan. This plan sets forth the management philosophy for the Snake River Corridor and provides strategies for addressing issues and objectives based on that philosophy. This document also describes the affected environment and discloses the potential environmental consequences that may result from implementation of various alternatives.

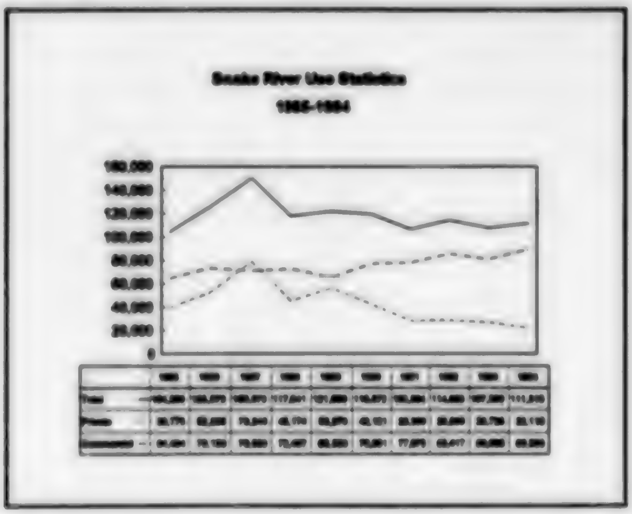
This section, Part One, contains a general summary of the natural history of the Snake River Corridor, a justification for an updated Snake River Management Plan and an overview of past legislation and planning pertaining to the area. Part Two identifies the issues related to the corridor and describes management objectives for this plan. Part Three chronicles the existing conditions on the river and the resources present in the corridor. Part Four identifies the alternatives developed to resolve the issues. Finally, Part Five describes the concept of carrying capacity and defines indicators and standards relating to the desired future conditions. It also outlines future monitoring and research needs.

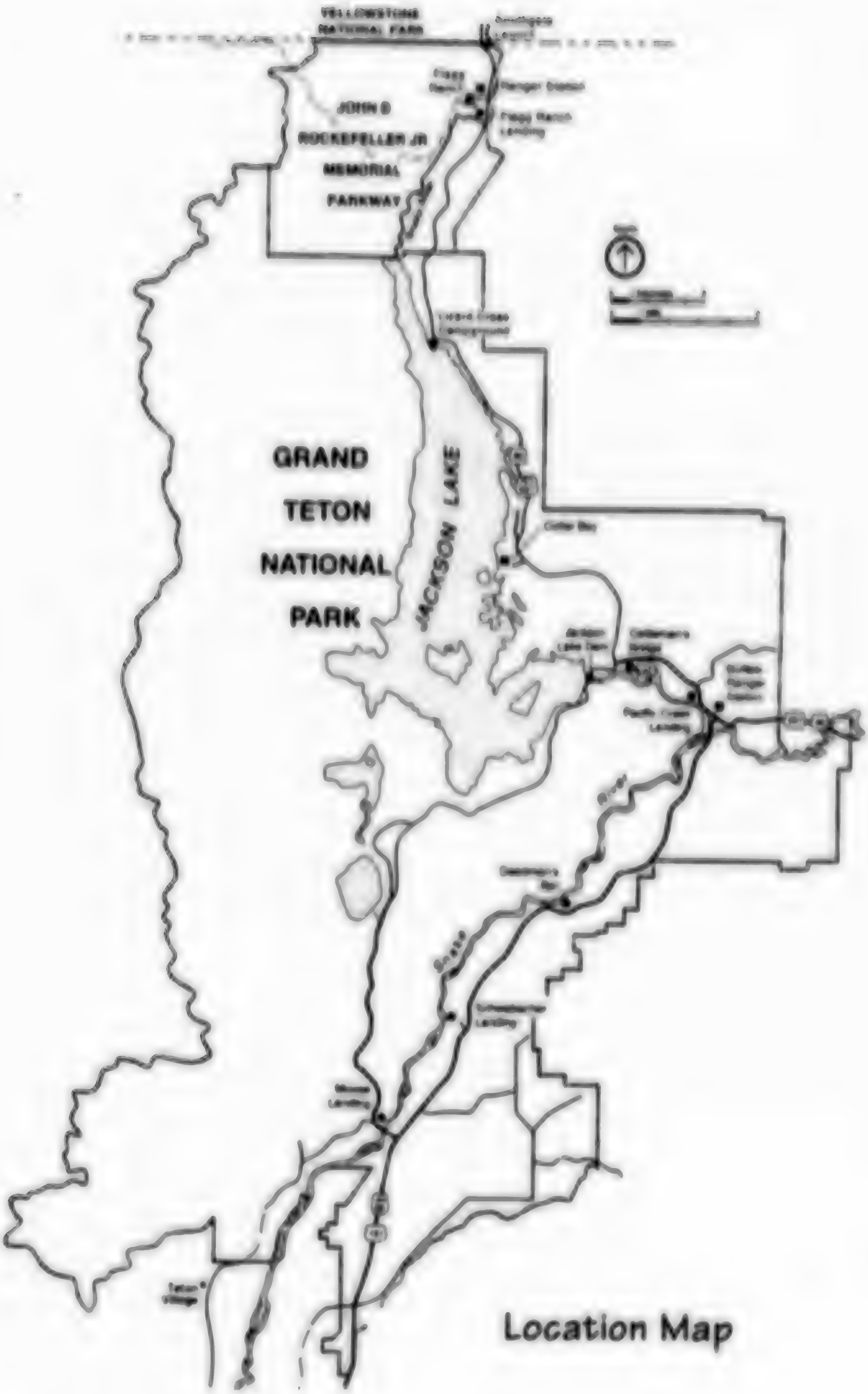


Geologists regard the Teton Range as one of the most impressive examples of fault-block mountains in the world. The peaks of the range, which tower 3,000 to 7,000 feet above the sagebrush flats and riparian Snake River environment, culminating in the Grand Teton (13,770 feet), dominate the park's landscape. The mountains began to rise about nine million years ago and are the youngest in the Rocky Mountain chain. Several piedmont lakes rimmed by moraines from the last glaciation period lie at the foot of the Tetons, forming part of the scenic foreground. The Snake River riparian zone, with it's colorful cottonwoods and outstanding wildlife habitat, lies in the foreground.

The Snake River originates in the highlands of northwestern Wyoming's Teton Wilderness Area, flows west through a portion of Yellowstone National Park, south through John D. Rockefeller Jr. Memorial Parkway and then enters Jackson Lake in Grand Teton National Park. After leaving the lake, the Snake River flows east and then south for about 25 miles before crossing the south boundary of Grand Teton National Park.

The popularity of float trips on the Snake River in Grand Teton National Park has increased steadily in the last decade. Between 1985 and 1995, total annual float trip use (expressed as numbers of people participating) in the 25-mile section of the river between Jackson Lake Dam and Moose increased an average of 6.8%. The greatest increase in overall use occurred during 1987 with an increase of 44% during that year. The greatest increase in use has occurred on commercial river trips, with scenic floats increasing 39% and guided fishing trips increasing 230% since 1985.





Location Map

Scenic floating, as it has evolved in Grand Teton National Park, is generally a brief daytime activity with the exception of fishing trips, which usually last all day. A float or fishing trip on the Snake River offers the visitor an unparalleled opportunity to observe and photograph the outstanding mountain scenery, while leisurely traveling through some of the best wildlife habitat in the area.

At present levels of use, scenic floating and fishing have caused some adverse impacts on the natural resources. Damage to or elimination of vegetation and accelerated erosion of stream banks is evident in all access areas. With the exception of the access areas, however, the impact on natural resources appears to be minor thus far. The access areas themselves are few enough in number and spaced far enough apart to allow the riparian area to remain a relatively wild area of high quality.

More serious is the apparent deterioration of intangible resources--those factors that make floating and other visitor activities in a natural area enjoyable and unique. Crowding, queuing, dust and noise are common daytime features at many of the access areas. During most summer days, floaters see numerous other boats between Deadman's Bar and Moose. When the river clears and fishing conditions are good, a scenic floater on the river passes many anchored fishermen, which detracts from the wilderness experience. Conversely, fishermen on the river are effected by a steady stream of scenic floaters. Consideration of these factors suggest that present levels of float-trip use are near (or may exceed) the optimum capacity and suggest that additional detractions or significant increase in use should be avoided.

THE NEED FOR THIS PLAN

The most recent Snake River Management Plan was completed in 1975 and updated in 1981. Since that time river use has steadily increased, placing demands and pressure on resources and existing facilities. In June 1994, the Snake River Corridor project was organized as a multi-agency planning cooperative. The intent of the Snake River Corridor Project was to initiate dialogue between the different management agencies in order to coordinate management of the Snake River Corridor from Jackson Lake Dam to Palisades Reservoir. The Snake River Management Plan for Grand Teton National Park will tier off of the Snake River Corridor Project.

PROJECT SCOPE AND OBJECTIVES

The National Park Service determined that an updated Snake River Management Plan was needed not only to resolve present issues, but to ensure wise choices for future management and use of the river corridor.

This Snake River Management Plan builds upon the goals set forth in the Grand Teton National Park Master Plan and Statement for Management which are discussed later in this chapter. Once finalized, it will guide National Park Service stewardship of the river corridor. The plan has been designed to achieve the following objectives:

- Identify the biological, cultural and scenic values that define the unique character of the Snake River Corridor.

- Identify key issues to be resolved in this plan.

- Formulate a management framework that responds to the issues and effectively guides National Park Service management of the river corridor.

- Determine the appropriate carrying capacities for visitor use of the river corridor.

- Present alternatives for visitor use of the river corridor.

- Develop a resource monitoring and implementation schedule for the completed plan.

LEGISLATIVE AND PLANNING HISTORY

Park Purpose

Grand Teton National Park was established to protect the area's spectacular scenic values, as characterized by the geologic features of the Teton Range and Jackson Hole, and the native plant and animal life. The original Grand Teton National Park (about 96,000 acres) was established by Congress on February 29,1929 (45 Stat. 1314). The park was enlarged to its present size by Congress on September 14, 1950 (Public Law 81-797, 64 Stat. 849), to include a portion of the lands within Jackson Hole National Monument. The national monument had been established by Presidential Proclamation (No. 2578, 57 Stat. 731) on March 15, 1943.

Planning Background

There are currently three plans that address protection and visitor use of the Snake River Corridor. These plans all share one theme in common: protecting the natural and cultural resources and providing for a quality visitor experience. Below is a summary of each of these documents.

Master Plan

Grand Teton National Park's Master Plan, approved in 1976, provides general direction for management of the park. This master plan introduces a number of management objectives, which directly influence the Snake River Management Plan. These objectives are:

- To manage access points to the Snake River for scenic and fishing float trips, so as to perpetuate a natural and wilderness-type environment through which float-trip groups can travel. This will be done by undertaking studies to determine the capacity of visitor use on and along the Snake River.
- To manage the Snake River cutthroat trout so as to ensure the perpetuation of a native wild population as part of a natural ecosystem within its range in Grand Teton National Park.
- To manage the biotic resources of the park for the purpose of perpetuating the indigenous plant and animal associates of the Teton Range and Jackson Hole, in as natural a condition of dynamic equilibrium as is feasible.
- To interpret the historical resources within the park, not only by giving attention to man's historic niche in this environment, but by interpreting the historical events that took place at Cunningham Cabin, Menor's Ferry, and Maude Noble Cabin, in context with the nation's history in general.

Statement for Management

A more recent planning document containing management objectives that directly relate to management of the Snake River Corridor is the Statement for Management which was approved in October, 1989. The following management objectives contained in that document relate to this planning effort:

- Manage the Snake River as a natural environment by limiting development and use levels.
- Maintain all waters in Class I condition.

- Manage all park natural resources under ecosystem concepts that are aimed at perpetuating natural systems rather than individual species or features.

- Establish ecologically-sound limits and manage all activities and uses to ensure compatibility with the preservation of park resources and a positive visitor experience.

- Preserve, manage, and display sites, building's, and objects that are significant and represent the broad sweep of western history and prehistory.

- Provide future generations the opportunity to enjoy, comprehend, and appreciate these tangible resources and their historical significance.

Existing Snake River Management Plan

By the mid-1960's there was concern that increasing commercial float trip traffic on the Snake River was having detrimental effects on the Snake River corridor within the park. In 1969 the Secretary of the Interior indicated the need to establish recreational carrying capacities for National Parks, and as a specific example of a use needing limitations, the Secretary cited float trips on the Snake River in Grand Teton National Park. In addition, the National Park Service is required by law to address carrying capacity in planning for parks: the 1978 National Parks and Recreation Act (P.L. 95-625) requires each park's general management plan to include *identification of and implementation commitments for visitor carrying capacities for all areas of the unit.* Part five of this plan contains a complete description of the carrying capacity concept and process for meeting this objective.

On August 28, 1974, the Director of the National Park Service issued a river running policy statement which directed all parks having river boating activities to develop management plans by April 30, 1976. The policy required that carrying capacity be determined for each river, that an interim capacity could be established if additional data were needed, and that use could be rationed if it exceeded the determined capacity.

As directed by this policy, Grand Teton National Park developed the Snake River Management Plan (Grand Teton National Park 1975b), which went into effect in April 1975 and was incorporated into the Natural Resource Management Plan.

The Snake River Management Plan of 1975 was reviewed and updated by park management in the fall of 1981 and addressed the following issues:

- Road Access: road access will be kept to a minimum and limited to existing roads at Jackson Lake Dam, Cattlemans Bridge, Pacific Creek, Deadman's Bar, Lower Schwabacher and Moose.

- Pollution Abatement: all pit toilets will be banned, vault toilets at access areas will be installed and regular garbage pickup at all access areas will be continued.
- Camping: camping is to be prohibited on the Snake River floodplain and will be enforced.
- General Maintenance: existing roads will be maintained to accommodate present use, upkeep of boat access areas will be Grand Teton National Park's responsibility, a minimum amount of removal or relocation of stream bed material may be done to maintain operational capability.
- Capacities and Limitations to Use: an interim limit of 80,000 annual visitor use days (commercial and private) was established for the Snake River until better information concerning the impact of present levels of use on natural and intangible resources is obtained. (This was intended as a moratorium on immediate future float trip use pending completion of ongoing and planned studies. Limits on the maximum number of commercial float trips may be imposed to insure that established total capacity is not exceeded and to allow for future growth of private use.)
- Operational Requirements and Conditions: standards for commercial float trip operators include; (a) commercial outfitters are required to provide an interpretive program as part of the float trip service; (b) commercial trips are prohibited from stopping at any point (except designated areas) along the river, and beginning in 1983, the quota for all commercial operators will be reduced by 50% from May 1 to June 20, in order to reduce interference with nesting birds and migrating and calving mammals.
- Administrative Requirements and Conditions: commercial operations on the Snake River are considered a privilege granted by the federal government, not a right due the permit holder. As such, a concession permit may not be transferred without prior approval of the National Park Service, nor in the event of a sale or transfer, no chattel value shall accrue to any rights to occupy and use Federal lands or other facilities granted by that concession permit.
- Private Float Trip Policies: in order to ensure that established total capacity numbers (80,000 annual user days) are not exceeded, future regulation and/or limitation of private use may be required.

PLANNING BY OTHER AGENCIES WHICH AFFECTS THE SNAKE RIVER

Snake River Corridor Project

The Snake River Corridor project is a cooperative planning effort currently being undertaken by fifteen agencies and organizations. The Snake River Corridor project was initiated with the hope of conserving the corridor's natural resources while balancing demand for recreational use and community needs for housing, transportation and utilities. The project provides a framework for coordinating numerous agency management efforts affecting the Snake River. The focus of the project is the 69-mile reach of the Snake River from Jackson Lake Dam to Palisades Reservoir.

The mission of the Snake River Corridor Project is *"to promote coordinated, broadly-supported management of the Snake River Corridor that protects and enhances natural resources and appropriate recreational opportunities."*

The project goals are:

- To preserve and enhance the natural character of the Snake River Corridor.
- To provide improved recreational opportunities within the corridor, consistent with minimum impact upon river resources, adjacent private lands, and quality of experience.
- To create a system of cooperative planning and river management between local, state, federal agencies, and community organizations.
- To date the project has held several public workshops to identify concerns about the river corridor and develop goals for the project, and to increase communication and cooperation between agencies and organizations.

Bridger-Teton National Forest

The Bridger-Teton National Forest is currently revising their Snake River Management Plan which addresses the 25.5-mile section located above the Palisades Reservoir, beginning at the South Park Bridge. This plan will address the following issues and concerns:

- Increasing use is creating congestion on ramps and on the river which is eroding the quality of experience for users especially on weekends and holidays in June, July, and August.
- Problems with safety and conflicts between different types of uses.

- The long-term productivity of bald eagles could be threatened by habitat alteration and increased human activity in core nesting and foraging areas.

- Camping facilities are not meeting users' needs.

- Lack of fire in sagebrush communities has reduced the quality of winter range habitat for elk and deer.

- Decreasing federal budgets are reducing the Forest Service's ability to adequately patrol the river, maintain facilities, educate visitors, and administer outfitter permits.

In April,1996, the Forest Service issued the draft Snake River Area Analysis written to address the above issues.

Bureau of Reclamation

The Jackson Lake Dam Instream Flow Study Preliminary Recreation Impact Assessment was undertaken by the Bureau of Reclamation to determine how flow regimes from the Jackson Lake Dam might impact recreational activities of the upper Snake River Corridor.

Initial results of this study indicate that boat launch sites are reaching facility carrying capacity. The study states that conflicts have occurred at these sites, primarily between commercial users and private boaters. According to the study, water level changes on the Snake can and do impact carrying capacity by increasing and decreasing demand for numbers of river trips. More research is needed on effects of water on number of river trips to offer an optimum low recommendation.

Two social carrying capacity conflicts were identified in this study that apply to the park's section of the river:

1. Scenic float guides and customers on the river perceive increasing numbers of fishermen as impacting their pristine experience and ability to view wildlife. Fishermen are observed more on the river because they stop or slow down to fish and are passed by other boaters. Floaters are only impacting each other at the river put-ins. Since floaters move down river at the same speed as the current, they seldom see each other.

2. Another conflict exists between commercial outfitters and private rafters. Private rafters see outfitters as controlling and dominating the river opportunities, while commercial rafters see private rafters as a threat due to growing numbers.

This study goes on to suggest that these conflicts can be solved through management schemes. Problem one can be solved through zoning of the water: the conflict between floaters and anglers can be reduced by providing early season (mid-June) high runoff flows combined with sustained releases of approximately two weeks. This type of flow rate would flush the river, making multiple channels of the braided sections of river navigable. This would increase carrying capacity allowing floaters to see fewer fishermen and possibly more wildlife. The study also suggests designating time blocks mainly for private rafters and for limited commercial rafting. These blocks for private rafters should be during off-peak times.

The study also proposed periodic spring flushing of side channels and isolated points along the river, which is considered to be of great benefit to the natural system as well as the recreational users. These high flows clear debris from the channels making them navigable, thereby increasing the variety of opportunities for fishing, and wildlife viewing for scenic floaters. It also reduces conflicting encounters between rafters and fishermen. This high water revitalizes the riparian systems providing nutrients and cleaning silt deposits from gravel beds. Additional mid-size gravel is moved by these flows into the mouths of side tributaries refreshing valuable cutthroat spawning habitat.

Wyoming Game & Fish

The Wyoming Game & Fish has been a cooperating agency in managing the fisheries of the Snake River. They developed a management plan for the Snake River Basin in November, 1995. It contained the following management objective:

> *The principle management objective in the Snake River drainage is to preserve the wild trout fishery and the integrity of the indigenous Snake River cutthroat trout. Maintaining the supply and increasing the diversity of sport fishing opportunities in the drainage is also a primary management objective.*

In October of 1990, a contract was signed between the State of Wyoming and the Bureau of Reclamation (BOR) for 33,000 acre-feet of water. The water is used to seasonally enhance instream flows below Jackson Lake Dam.

Future Management Activities

The Wyoming Game and Fish has proposed the following actives in their management plan for the Snake River:

- Maintain current management activities and continue as the lead agency in the management of Wyoming's fisheries resources.

- Continue to monitor the biological and social response to special regulations.

- Pursue a habitat restoration project for the Upper Bar BC spring creek within Grand Teton National Park.

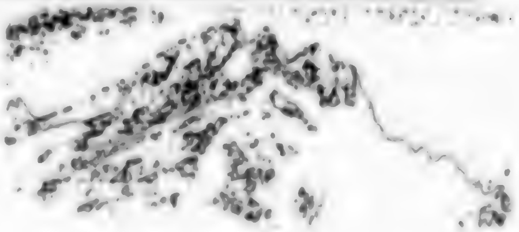
- Initiate a Snake River cutthroat trout telemetry study with the National Biological Service to determine seasonal movements.

- Rejuvenate spawning gravels on spring creeks as necessary.

- Update drainage surveys as pressure warrants.

- Inventory streams and lakes where information on non-game species is limited or lacking.

PART TWO, PLANNING ISSUES



> *"A river traverses time as well as topography it runs not only through country but through mankind."* *Wallace Stegner*

PART TWO, PLANNING ISSUES

The issues presented in this section establish the framework for the entire Snake River planning effort. They are the culmination of information gathered from public workshops, written comments, consultation with other public agencies, and in-house meetings with NPS staff.

PUBLIC PARTICIPATION

From the outset of the planning process, public input played a critical role in determining the problems and opportunities that would be addressed by the plan. To date, three public workshops have been held during November 1994, June 1994, and March 1995. In October 1995, an additional open house was held for float and fishing trip permit holders to hear some of their comments and suggestions about river regulation, manipulation, and commercial use.

Additional public participation will be sought throughout this process by a variety of means: notices will be mailed to workshop participants, public agencies, members of the public who contributed previous comments, and local and regional publications advertising the commencement of a 45-day public review and comment period for the draft plan.

PLANNING ISSUES

Listed below and continuing on the following pages are the planning issues that were identified as critical to the creation of a river management plan that is environmentally-sensitive and responsive to the needs of park visitors.

All of the planning issues share one topic: the level of different types of recreation use on the river. How much recreation use can and should the river support? Visitors to the Snake River were estimated to be over 104,100 in 1995, while the previous Snake River Management Plan defined the river's carrying capacity at 80,000. The general goal of this plan is to provide a range of rewarding recreational opportunities while protecting the natural and cultural resources of the river corridor.

Resource Protection and Enhancement

Public opinion obtained during the scoping process emphasized the desire to maintain the river's natural character in order to protect wildlife and scenic quality. These values must be of primary importance in the formation of this management plan.

Fisheries

The primary limiting factors affecting fisheries in the Snake River are winter flows, loss of instream habitat, and loss of spawning areas. Reduced winter flow below Jackson Lake Dam limits the amount of wintering habitat. Dikes encourage aggradation and loss of instream structure and prevent cottonwood regeneration within the riparian areas. Spawning habitat is degraded where livestock and wildlife winter along spring creeks.

Also, flooding and gravel rejuvenation in tributary spring creeks has been eliminated by dike construction, resulting in a continuing loss of spawning areas.

Hydrology

It should be determined how fluctuating water levels caused by dam openings and closures affect other wildlife, particularly waterfowl and other shore-nesting birds and amphibians.

Changes in river structure caused by the dam's artificial flows should also be explored. Floods are now infrequent and high flows have been nearly eliminated. How the river's braiding pattern, sandbars, floodplain, riparian areas, and banks will be affected by these changes should be investigated.

Vegetation

The observed decline in cottonwood seed regeneration in riparian areas should be explored in light of dam openings and closures. In order to germinate, cottonwood seeds must be carried by water over gravelly areas for scarification and then deposited in soil where there is little competition. Cottonwood, a shade-intolerant species, is being out-competed by Colorado blue spruce, a species not native to western Wyoming (B. Smith, pers. comm.). The effects of artificial river flows on cottonwood seed regeneration need to be thoroughly investigated.

Heavily used areas such as launches, concessions picnic sites, fishing spots, and parking areas along the river present unique issues. The extent of site degradations such as soil erosion, soil compaction, and vegetation trampling at these disturbed areas, needs to be addressed and quantified.

Wildlife

Areas within 1/2 mile from known eagle nests are closed to public access from February 1 to August 15. Eagles complete nesting and fledging of young during this time period. It needs to be determined whether the 1/2 mile distance is adequate to protect the nesting territories of this species.

Temporary habitat closures for other species should also be explored. Areas within 250 yards of the nesting sites of osprey, trumpeter swan, and great blue heron are presently closed from February 1 to August 20, when posted. It has been determined that osprey and herons complete nesting and fledging of young during this time period, but trumpeter swan cygnets do not fledge until mid-September. Perhaps swans should not be included with the other species, but should have their own extended closure.

Trumpeter swans do not presently nest in the river bottom areas, but historically they nested in the Oxbow Bend. It is likely that swans abandoned this nesting territory because of human disturbance. Lockman (1988) reported that shoreline fishing, visitor activity, and boating on the Oxbow markedly decreased the capability of this area to support breeding swans. A closure might make the area more attractive in the future to a swan pair seeking a breeding territory.

In addition, two great blue heron rookeries in the Oxbow Bend have not been used in a number of years. The Northeast Island rookery last produced young in 1984, and the West

Island rookery has not been productive since 1990 (Reid 1994). More research is needed to determine the effects of human activities on heron nests.

Wintering wildlife is presently protected by the December 15 to April 1 river bottom closure, which extends from the dam south to Menor's Ferry. This also protects the nesting activities of raptors and other birds not included by the aforementioned closures.

Visitor Use

The impact that river users have on wildlife should also be explored. Impact to wildlife including elk, deer, bear, or bison have never been adequately quantified.

Grand Teton Lodge Company, Barker-Ewing, and Triangle X Ranch have used meal sites along the river for their guests. The Lodge Company also uses a picnic site in the Oxbow area to host meals for up to 500 people at a time (Oxbow files, S&RM). The effects of these activities on wildlife and vegetation have not been quantified. A decision should be made about whether these types of activities are appropriate in the river bottom, especially in sensitive riparian areas such as the Oxbow.

A related issue concerns bear attractants which are frequently made accessible to bears and other wildlife along the river by park visitors and concession companies (Baptiste and Cain 1993, 1995). For example, undesirable fish caught below the dam are often left on the shore to decompose in a location heavily used by visitors and frequented by bears. Also, panhandling bears have obtained garbage scraps in recent years at the Grand Teton Lodge Company's Deadman's Bar picnic site, which is located in prime bear habitat.

With grizzly bears now known to be moving through the riparian areas, the issue of unsecured bear attractants presents a critical safety concern for park visitors: in 1994, a grizzly bear with three cubs moved through the vicinity of the Triangle X riverside picnic site (Baptiste and Cain 1994).

Access

Current boat launch areas become crowded during the summer months with boaters having to wait in line to launch or exit the river. At some access points, gravel builds up and impedes launch use. The number and location of launch sites need to be reviewed and alterations to the landings evaluated: should there be slip clearance or dredging, alternate locations as the river character changes, or permanent vs. temporary landings designated?

Parking at some launch areas becomes congested and is not well defined. At times, the vault toilets at Deadman's Bar and Pacific Creek have long lines. What level of development is appropriate at the launch areas that will not further impact the riverine environment?

Commercial and Private River Use

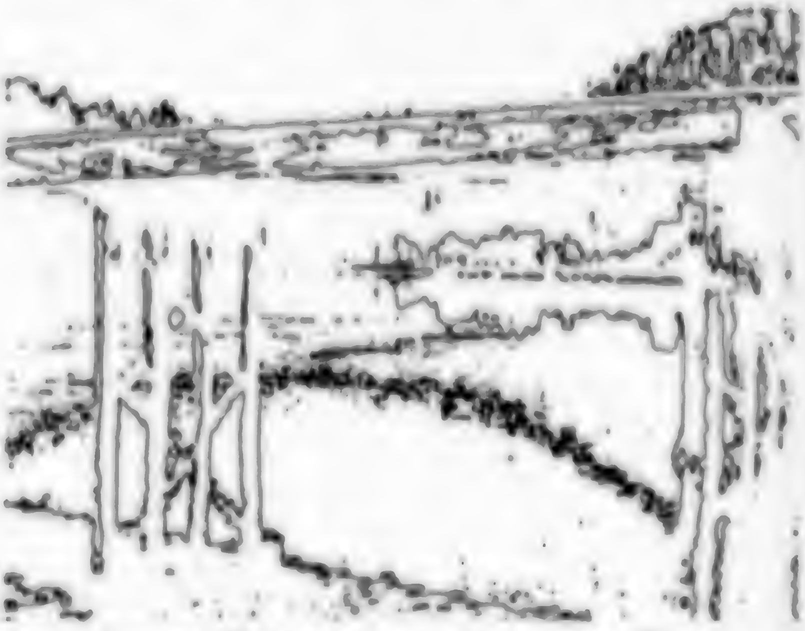
The perception exists that the river may become overcrowded in the future. This perception ties in with the often misunderstood concept of carrying capacity.

Carrying capacity means the amount and type of recreational use an area can accommodate without altering either the environment or the user's experience beyond the degree of change deemed acceptable by the management objectives for the area. Carrying capacities are not set according to the composition or volume of current use. Instead, they are the result of management decisions. These decisions in turn determine the type and amount of recreation to be provided.

If use of the Snake River continues to advance at the current rate, there will be increased stress on aesthetic and wildlife resources. This stress will be caused by the growing number of largely unregulated non-commercial and guided fishing boats and increased use of commercial scenic launches.

What is now needed is a reevaluation of carrying capacities for the Snake River, based on scientific recommendations. This reevaluation will then establish updated management objectives for the river, to determine acceptable upper limits of use. In addition to developing new carrying capacities, methods for staying within these limits need to be generated and explored.

THE GOALS OF THE SNAKE RIVER MANAGMENT PLAN



The basic goals of Grand Teton National Park in the management of the Snake River reflect those of the NPS as expressed in the National Park Service Act of 1916 and the Redwoods Act of 1978. The main objective is to "*...conserve the scenery and natural and historic objects and wildlife therein and to provide for the enjoyment of the same [and] leave them unimpaired....*" These legislative mandates are the driving force behind management decisions effecting NPS areas across the nation. The mandates which apply to this project are:

1) To preserve the natural resources and environmental processes of the Snake River corridor and the associated riparian and river environments. To protect the Snake River and its riparian environment from unacceptable change caused by human activities.

2) To protect and preserve the historic resources in the river corridor and associated environments.

3) To provide Snake River users the opportunity to participate in and appreciate a variety of unique experiences offered by Grand Teton National Park as a whole and by the riverine environment in particular. To provide an opportunity for all participants to enjoy a rewarding river running experience.

4) To provide a quality Snake River experience through Grand Teton National Park:

a) By determining the impact of crowding and use levels on visitor experience.

b) By then establishing a human use capacity and a limitation on use that protects the river s natural resources and processes.

5) To provide opportunities for people of various ages and abilities to participate in river trips.

PART THREE, RESOURCE OVERVIEW & EXISTING CONDITIONS

"The Snake is the largest river in Wyoming, and tenth longest in the United States... The river through Jackson Hole may be the richest high elevation riparian habitat in the nation... There is no North American rival combining wildlife and mountain scenery..."
Tim Palmer, "The Snake River: Window to the West"

PART THREE, RESOURCE OVERVIEW & EXISTING CONDITIONS

This section presents a description of the environment and factors affecting the Snake River corridor in Grand Teton National Park. A variety of documented literature contributed to the construction of this overview. A portion of information was adapted from the existing Grand Teton National Park Snake River Managment Plan documented in 1975. Other reference materials are cited in the bibliography.

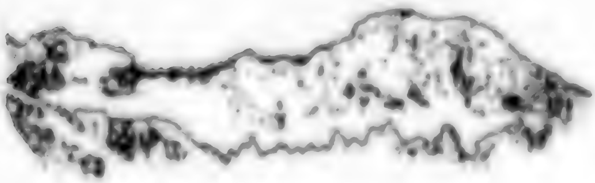
NATURAL RESOURCES

Topography & Geology

A prominent visual feature of Grand Teton National Park is the abrupt rise of the Teton Range from the Jackson Hole valley floor. These mountains formed through normal faulting processes, which began approximately nine million years ago. Within the park, the Tetons rise to 7,000 feet above a valley which spans about forty-eight miles along a general north-south axis, extends three to twelve miles wide, and lies between 6,000 and 7,000 feet above sea level.

The geology of the Jackson Hole area is one of the most documented in North America. Sedimentation and extensive erosion has occurred due to various stages of volcanism, glaciation, and uplift (Kiefling 1978). Along the base of the Teton Range, a series of large piedmont lakes mirror the peaks. Of these glacier-formed lakes, Jackson Lake is the largest. Relatively small streams drain from the steep-walled canyons along the east front of the range while larger tributaries from the north and east drain out of the highlands. All of these streams flow into the Snake River.

The Snake River and surrounding lowlands were formed during three different glacial periods: the Paleozoic, Mesozoic, and Tertiary, whose features are geogically young. Snad, gravel and boulders are remnants of alluvial and glacial deposits from these three periods (Kiefling 1978). Glacial and recent alluvial terraces parallel the present flood plain throughout sections of river within the park. South of Jackson Lake, the Snake River has cut into outwash of the most recent glacial advance and the substrate consists almost entirely of quartzite cobbles embedded in a sandy-silt matrix. The river is relatively active on its floodplain and is braided throughout nearly half its lenght in the park. Recent Teton fault activity has caused a westward shift in the course of the river through Jackson Hole.



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Soil

Soil samples of the Snake River floodplain and terraces within Grand Teton National Park consist primarily of sandy to coarse loams. These soil sections were formed in alluvium and glacial deposits and are characterized by being very deep. Soil found on the low percentage slopes of the floodplain is generally poorly drained, whereas soil found on the steeper slopes extending from the floodplain to the foothills is well drained (USDA 1982).

Hydrology

The Snake River is a complex water system both in and outside Grand Teton National Park. Draining approximately 3,465 square miles in Wyoming, this major tributary of the Columbia River originates on the western slope of the continental divide in northwest Wyoming's Teton Wilderness Area. Flowing westward, the river passes through a portion of Yellowstone National Park, south through John D. Rockefeller, Jr. Memorial Parkway and enters Jackson Lake within Grand Teton National Park boundaries. At this point the drainage area covers 486 square miles (USGS survey 1994).

Jackson Lake presently encompasses an area of 25,730 acres and is used to store water for irrigation in Idaho's Snake River Valley. The reservoir was first built in 1906 by installing a log crib dam at the outlet of the natural lake to create a useable capacity of 300,000 acre-feet. This dam washed out in 1910 and was replaced by an earth dam, increasing usable capacity to 380,000 acre-ft. Usable capacity was subssequently increased to 790,000 acre-feet in 1916 when the earth dam was raised, and then to 847,000 acre-feet in 1917 by dredging the outlet. The Bureau of Reclamation rebuilt the dam between 1987-89, maintaining the same capacity (USGS 1994).

The Snake River flows east out of Jackson Lake and then south for about 25 miles before crossing the south boundary of the park. The Bureau of Reclamation dam at the outlet of Jackson Lake regulates the flow for four miles downstream where two major tributaries, Pacific Creek and Buffalo Fork River, discharge into the Snake River. Additional smaller tributaries flow into the river in this stretch of water. As it exits the park, the river flows south and west through the valley of Jackson Hole for about 47 miles. It then turns south and east, following a fault structure, and enters the steep-walled Snake River canyon through which it flows south and then west into Idaho where it enters Palisades Reservoir.

Water Quality

The chemical quality of the water in the upper Snake River is good, being slightly alkaline (ph 7.6-8.4) with relatively small amounts of dissolved materials. (Dissolved solids vary throughout the year from 86 to 251 mg/liter.) Both alkalinity and dissolved material increase somewhat downstream.

Water Flows

Section 9 of PL 87-187 (64 Stat. 849) and a Memorandum of Understanding dated November 29, 1956, between the National Park Service and the Bureau of Reclamation, provide for the operation guidelines of Jackson Lake Reservoir. Congress clearly intended that expansion of the park would not conflict with Bureau of

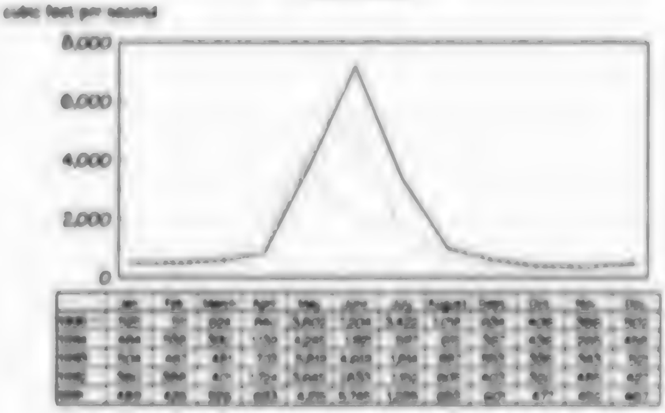
Reclamation operations or with the rights of the space holders in the reservoir. The Bureau retains complete and exclusive control of the flow and use of water in the reservoir including the right to raise and lower the water level at will; however, the Bureau will consider maintaining a constant level from June through September and will consult with the NPS before developing anything in the operation zone that might affect recreational facilities or use.

In October of 1990, a contract was signed between the State of Wyoming and the Bureau of Reclamation (BOR) to maintain minimum acceptable flow levels of 280 cubic feet per second (CFS) during the winter to protect the trout fishery. · According to Annear (1989), " management objectives for the Snake River should emphasize establishment of historic average releases or natural instantaneous inflows to the reservoir, whichever is less, as a base flow to the river." A release of 400 cfs, which is slightly less than an average winter flow, is recommended as the optimal minimum winter flow. A flow of 400 cfs would protect the Jackson Lake lake trout fishery, avoid conflicts with water rights, and maintain downstream fisheries at historic levels. A flow of 280 cfs was determined to be an acceptable minimum release level (WY Game & Fish 1992).

Jackson Lake Dam

Average Outflows

1991-1995



Climate

The northwest Wyoming climate is characterized by short, cool summers and falls, and long, cold winters which tend to linger late into the spring. The combination of high elevation, low humidity and surrounding mountain ranges cause this cool climate which has a large diurnal temperature range. During summer months, daytime highs of 70-80 degrees F are commonly replaced by nighttime lows below 40 degrees F with potential for subfreezing temperatures during all summer months. Winter minimum temperatures of minus 40 degrees F are often recorded, with a record of minus 63 degrees F observed at Moran on February 9, 1933.

Precipitation in the area varies considerably. Southwest winds blowing against the Tetons, a range oriented from north to south, create a rain shadow on the mountains east side (Dirks & Martner,Anderson). Additionally, precipitation is greater in the northern part of Jackson Hole because the southern portion of the Teton Range is higher in elevation. About 75 percent of annual precipitation is in the form of snow between November and April, when ground snow cover is usually continuous.

Vegetation

Climatic, topo-edaphic, and disturbance factors create a mosaic of vegetation communities in the Snake River floodplain, terraces, and Jackson Lake area within Grand Teton National Park. This mosaic consists of forested and non-forested lands, varying in age and species composition (Anderson 1994). Vegetation in the Jackson Hole valley can be categorized into the aquatic, riparian, and upland zones.

In the aquatic zone, consisting of aquatic and semi-aquatic vegetation in the flood channels and tributaries, watercress (Rorippa nasturtium-aquaticum), white watercrowfeet (Ranunculus aquatilis), and pondweed (Potamogeton spp.) are most prevalent. Watercress is found primarily in the shoreline areas; white watercrowfeet is associated with gravel-rocky bottom environs; pondweed with silt bottom areas. Other major species found in the aquatic zone are star duckweed (Lemna triculca), water milfoil (Myriophyllum spp.), mare's tail (Hippuris vulgaris), monkey flower (Mimulus glabratus), and horsetail (Equisetum fluviatile) (Kiefling 1978). Moss and algae are also in this zone. Both encrusting and filamentous algae are present in the river proper, with encrusting algae most common in swifter water.

A variety of vegetation species inhabit areas immediately surrounding and paralleling Jackson Lake and the Snake River. This area is what is known as the riparian zone. The riparian zone frequently has a high number of edges and strata in a comparatively small area. This results in a habitat which produces a large number of species, reflecting the diversity of plant species and community structure (Thomas et al. 1979). Sandbars, gravelbars, and abandoned river channels provide substrate for pioneer terrestrial plant communities. Narrowleaf cottonwood (Populus angustifolia) usually develops on gravel, interior willow (Salix interior) on sand, and blueberry willow (Salix pseudocordata) on silt and flooded areas. In succession, these plants are often replaced by climax blue spruce (Picea pungens) in wetter sites and by sagebrush or bunchgrass in more xeric locations (Kiefling 1978).

The most conspicuous plant community in the riparian zone is the floodplain forest which, in addition to climax blue spruce and narrowleaf cottonwood, contains lodgepole pine (Pinus contorta), quaking aspen (Populus tremuloides), russet buffaloberry (Shepherdia canadensis), red osier dogwood (Cornus stolonifera), thinleaf alder (Alnus tenuifolia), balsam poplar (Populus balsamifera), and w[illegible]Salix spp.). The understory contains a mixture of western wheatgrass (Agropyron smithii), alpine timothy (Phleum alpinum), bluegrass (Poa spp.), brome grass (Bromus spp.), yellow sweetclover (Melilotus officinalis), elk thistle (Cirsium foliosum), redtop (Agrostis spp.), snowberry (Symphoricarpus spp.), and woods rose (Rosa woodsii).

Another plant community associated with the riparian zone is the marshy meadow. In addition to willow, marshy meadows contain sedges (Carex spp.), bluegrass (Poa spp.), tufted hairgrass (Deschampsia caespitosa), rushes (Juncus spp.), and shrubby cinquefoil (Potentilla fruticosa).

The upland zone, also known as the outwash plain, exists on more xeric or drier sites. The upland zone, extending from the river terraces to the foothills, takes up a large portion of the valley floor. This zone provides ideal conditions for vegetation such as big sagebrush (Artemisia tridentata), low sagebrush (Artemisia arbuscula), bitterbrush (Purshia tridentata), rabbitbrush (Chrysothamnus spp.), yarrow (Achillea lanulosa), bluebunch wheatgrass (Agropyron spicatum), Idaho fescue (Festuca idahoensis), balsamroot (Balsamorrhiza sagittata), lupine (Lupinus spp.), and wild buckwheat (Eriogonum spp.). Existing in this upland zone is the sagebrush-forest ecotone. Soil texture and moisture are the primary factors affecting the ecotone between sagebrush and forest communities, with lodgepole pine advancing into the sagebrush area only during the wettest years (Anderson 1994).

Aspen (Populus tremuloides), a relatively short lived tree species (80-100 years), occurs in both the riparian and upland zones. It is considered a pioneer species and is succeeded by shade tolerant and longer lived species. However, this succession is reduced with the presence of recurrent fire in aspen stands. According to Anderson (1994) there has been very little aspen reproduction in the park since the early 1900s because of fire suppression.

Exotic plant species are a serious concern in the park. According to Shaw (1992), the plant species list for Grand Teton National Park contained 88 exotics in 1976. In 1992, 117 alien species were listed, representing an increase of 33 percent. Control measures are performed to reduce the population level of high priority exotic species, using chemical, mechanical, and biological controls. These species of highest priority include musk thistle (Carduus nutans), spotted knapweed (Centaurea maculosa), diffuse knapweed (Centaura diffusa), Canada thistle (Cirsium arvense), common tansy (Tanacetum vulgare), common mullein (Verbascum thapsus), oxeye daisy (Chrysanthemum leucanthemum), butter-n-eggs (Linaria vulgaris), houndstongue (Cynoglossum officinale), black henbone (Hyoscyamus niger), dyers woad (Isatis tinctoria), dalmation toadflax (Linaria dalmatica), leafy spurge (Euphorbia esula), and St. Johnswort (Hypericum perforatum). These species are most commonly found in the park in roadside ditches, areas grazed by cattle, and throughout the riparian zone.

A survey of exotic plants in the Snake River Bottom from the dam to the south boundary was done in 1993 (Haeker et al. 1993). In order of prevalence, the following exotics were found in the survey: Canada thistle, musk thistle, mullein, yellow toadflax, common tansy, oxeye daisy, and houndstongue.

Aquatic Invertebrates

Invertebrate productivity in the Snake River is slightly above average compared to similar rivers in the west and is an integral part of the fisheries, wildlife, and ecosystem. The aquatic invertebrate fauna is fairly complex with approximately 170 species having been collected and identified. Species diversity is much lower between Jackson Lake Dam and Pacific Creek than in areas downstream. One study showed that twenty-three major species were identified in downstream areas whereas only seven identified species exist between the dam and Pacific Creek. This mayreflect fluctuating flows from dam operation, differences in substrate, and lack of niche diversity above Pacific Creek. Caddisflies (Trichoptera), mayflies (Ephemeroptera), stoneflies (Plecoptera), and true flies (Diptera) compose over 98 percent of the total biomass of invertebrates in the river. Caddisflies of the Hydropsyche and Arctopsyche genera are the most abundant group present.

Fish

The fish fauna of the upper Snake River is species poor, which is typical of intermountain cold waters. The native fish fauna includes Snake River cutthroat trout (Salmo clarki spp.), mountain whitefish (Prosopium williamsoni), Utah sucker (Catostomus ardens), bluehead sucker (C. discobolus), mountain sucker (Pantosteus platyrhynchus), bonneville redside shiner (Richardsonius balteatus), speckled dace (Rhinichthys osculus), longnose dace (R. cataractae), Utah chub (Gila atraria), leatherside chub (G. copei), mottled sculpin (Cottus bairdi), and the Paiute sculpin (C. beldingi) (Kiefling).

Presently, four non-native salmonids inhabit the upper Snake River drainage. In 1933, both brook trout (Salvelinus fontinalis) and rainbow trout (Oncorhynchus mykis) were introduced into the drainage by the Wyoming Game and Fish Department. Brook trout can be found throughout the drainage though they prefer smaller streams and beaver ponds. The few remaining wild populations of rainbow trout are infrequently found in Jenny Lake and sections of the Gros Ventre River. In 1890, both brown trout (Salmo trutta) and lake trout (Salvelinus namaycush) were introduced into two lakes in the drainage by the U.S. Fish Commission. Within a short period of time, both species drifted into Jackson Lake and other waters throughout the drainage. Now, lake trout inhabit many surrounding lakes, whereas brown trout are mostly confined to the Snake River and Jackson Lake (Kiefling).

The Snake River cutthroat trout (Oncorhynchus clarki spp.) inhabits the river between Jackson Lake and Palisades Reservoir. The population supports an important fishery and is of considerable scientific and aesthetic value. It is thought to be a separate subspecies of the cutthroat series due to its distinct fine spotting pattern and the fact that it is well adapted to large swift streams (Kiefling). Other factors defining it as a possible separate subspecies is that it is fast growing but short lived with a high rate of natural mortality. In fact, only one pair of spawners returns for every 2,000 eggs laid (WGFD). During spawning in the spring of the year, Snake River cutthroat migrate into the tributaries. Spawning success depends highly upon the conditions of these tributaries which are easily affected by migratory blocks (beaver dams, natural cascades of water, and irrigation headgates), lack of cover, substrate size, turbidity, flooding, pollution from livestock, and lack of food production. Additionally, concerns regarding the future of the Snake River cutthroat fishery have increased in recent years due to increased water development, irrigation water demands, loss of aquatic habitat from flood control management, and greater fishing demand.(Rowan).

Fishing regulations in Grand Teton National Park are contained within the Wyoming Game and Fish state fishing regulations. The use of fish or fish eggs for bait is prohibited. Lakes closed to fishing to protect nesting waterfowl include: Christian Ponds, Hedrick's Pond, Moose Pond, Sawmill Pond and Swan Lake. Blacktail Spring Creek, Upper Bar BC Spring Creek, Lower Bar BC Spring Creek, and Cottonwood Creek downstream from the Saddle Horse concession bridge are closed to fishing from November 1 through July 31. The period from April 1 through July 31 is closed to protect spawning Snake River cutthroat trout.

The first special regulation initiated for the Snake River occurred in 1973. The creel limit on cutthroat trout between Jackson Lake Dam and the Moose Bridge was reduced to two fish. In 1986, a slot limit was initiated on the Snake River from 1,000 feet below Jackson Lake Dam to Moose. The regulation established was a limit of four trout per day with only one trout to exceed 15 inches. All trout 11 to 15 inches must be released, and fishing done with artificial flies or lures only. In 1990, the slot range was extended to protect all fish between 11 and 18 inches. This was done to protect a greater percentage of the spawning fish.

Beginning in 1996, there were two new regulations implemented on the Snake River: 1) The creel limit on the Snake River from Yellowstone National Park to the West Table boat ramp was reduced to three fish and 2) The slot limit from 1,000 feet below Jackson Lake dam to the Wilson Bridge was modified to 12 to 18 inches.

According to Annear" management objectives of the Snake River should emphasize establishment of historic average releases or natural instantaneous inflows to the reservoir, whichever is less, as a base flow to the river." A release of 400 cfs, which is slightly less than the average winter flow, is recommended in Annear s study as the optimal minimum winter flow. A flow of 400 cfs would protect the Jackson Lake lake trout fishery, avoid conflicts with water rights, and maintain downstream fisheries at historic levels. A flow of 280 cfs was determined to be an acceptable minimum release level.

Amphibians and Reptiles

The boreal chorus frog (Pseudacris triseriata), the spotted frog (Rana pretiosa), the boreal toad (Bufo boreas), and the tiger salamander (Ambystoma tigrinum) are all native to the Snake River area. The leopard frog (Rana pipiens) has not been observed in the park since the 1950s and is believed to have been extirpated (Peterson 1992).

Boreal toads, spotted and chorus frogs inhabit Schwabacher Pond, a beaver pond adjacent to the Snake River at the upper Schwabacher Landing. In 1995, this site supported breeding populations of chorus frogs and boreal toads. Although no spotted frog egg masses were found in the immediate vicinity, a number of juvenile spotted frogs used the area, suggesting that there probably was a breeding site nearby (Baptiste 1995). Spotted and chorus frogs and boreal toads are likely to be found in similar areas throughout the Snake River corridor.

Two species of garter snakes, common (Thamnophis sirtalis) and wandering (T. elegans), inhabit the riparian and upland areas around the Snake River. The sagebrush lizard (Sceloporus graciosus) is rare in Grand Teton National Park. Only four observations of this lizard have been documented since 1965, two occurring in the Snake River upland zone (S&RM database).

Birds

According to the Grand Teton National Park Resources Management Plan (1995), there are over 300 species of birds within the park. Some of the more prominent species which use the Snake River aquatic and riparian zones for feeding, nesting, and loafing are the white pelican (Pelecanus erythrorhynchos), great blue heron (Ardea herodias), bald eagle (Haliaeetus leucocephalus), osprey (Pandion haliaetus), trumpeter swan (Cygnus buccinator), Canada goose (Branta canadensis), and sandhill crane (Grus canadensis). A variety of other raptors, waterfowl, and neotropical migrants also use the river corridor.

Of particular interest, in relation to the intent of this project, are the bald eagle, osprey, great blue heron, and trumpeter swan, all protected by seasonal closures on the river (Grand Teton National Park 1994, National Park Service 1994). There are six known bald eagle nests along the river corridor; all were used in 1995. Eight of the 17 known osprey nests and three of four known heron rookeries located along the river corridor were occupied in 1995 (S&RM database). Another heron rookery in the Oxbow Bend is no longer used and may have been abandoned due to human disturbance (Reid 1994). Trumpeter swans historically nested in the Oxbow Bend and Sawmill Ponds areas but presently use the river corridor only as a wintering area. It is believed that the Oxbow Bend swan nest also was abandoned due to human disturbance (Grand Teton National Park 1988). Thirty-nine swans were counted between the Jackson Lake Dam and Moose during the January, 1995 mid-winter swan survey (U.S. Fish & Wildlife Service 1995a).

A number of other birds use the riparian and upland areas for nesting, loafing, and feeding. Red-tailed hawks (Buteo jamaicensis), common ravens (Corvus corax), great-horned owls (Bubo virginianus), and Canada geese are some of the species known to nest in the river bottom areas.

Mammals

Several of the park's 54 species of mammals use the Snake River corridor. Beaver (Castor canadensis), river otter (Lutra canadensis pacifica), and muskrat (Ondatra zibethicus) inhabit aquatic and riparian zones. Small mammals such as red-backed voles (Clethrionomys gapperi), deer mice (Peromyscus maniculatus), pocket gophers (Thomomys talpoides), squirrels (Spermophilus sp.), and chipmunks (Tamias sp.) are abundant in riparian and upland areas and provide an important food base for carnivorous mammals such as coyotes (Canis latrans), martens (Martes americana), badgers (Taxidea taxus), and weasels (Mustela sp.). Larger, more conspicuous mammals which use the riverine areas include moose (Alces alces shirasi), bison (Bison bison), elk (Cervus elaphus nelsoni), mule deer (Odocoileus hemionus hemionus), pronghorn antelope (Antilocapra americana americana), black bear (Ursus americanus cinnamomum), mountain lion (Felis concolor), and grizzly bear (Ursus arctos horribilis).

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Elk, moose, and bison use the riverine areas during the summer for calving (see map). Elk and bison calve in riparian and upland areas west of the river from the Oxbow south to Burned Ridge. Elk also calve west of the river from the north end of Timbered Island south to Cottonwood Creek, and in a small area between Lake Creek (near Phelps Lake) and the Snake River.

Moose and mule deer winter in the river bottom, along with small numbers of elk and bison.

The Snake River bottom east of the river is open to elk hunting from Spread Creek south to Ditch Creek from approximately October 14 through December 3, as part of a park-wide elk reduction program (National Park Service 1995).

Rare and Endangered Species

All of the five endangered or threatened species federally listed for this area have used the Snake River corridor: the endangered peregrine falcon (Falco perigrinus) and whooping crane (Grus americana), the threatened bald eagle (Haliaeetus leucocephalus) and grizzly bear (Ursus arctos horribilis), and the gray wolf (Canis lupus), now considered experimental. As of November, 1994, all wolves within Wyoming are regarded as part of the nonessential experimental wolf population. On National Park and National Wildlife Refuge system lands however, wolves are still considered a threatened species and are fully protected under Section 7(c) of the Endangered Species Act (Fish and Wildlife Service 1995).

Peregrine falcons nest in and migrate through the park. No peregrine nests are located in the Snake River corridor, but park files contain 33 documented sightings of peregrine falcons in riparian and upland areas of the river, indicating use of the area for traveling and foraging. Observations have occurred from the early 1960s until the present in the months of April through October.

The whooping crane is expected in this area as a migrant species (U.S. Fish and Wildlife Service 1995b). From 1978 through 1995, there have been twelve documented observations of whooping cranes in the Snake River corridor. Of these, two were on the ground foraging or loafing, and seven were observed flying within the corridor. The remaining three whooping crane observation reports did not contain specific information about the birds' behavior (S&RM database).

Bald eagles use the Snake River corridor throughout the year. As previously mentioned, six bald eagle pairs currently nest, feed, roost, and loaf along the river corridor.

Tracking data on grizzly bears collared by the Wyoming Game and Fish Department indicate that at least three different grizzly bears used the Snake River corridor area in 1994 and 1995 (Baptiste and Cain 1994, 1995).

Gray wolf sightings are rare in the park; in the past 20 years, there have been no verified gray wolf sightings in the Snake River corridor.

Drawing on pg. 21 & 27 by:
Denise Casey

The U.S. Fish and Wildlife Service (1994) has also identified fourteen candidate species which may occur within the project area. All are category 2 species, which means that current available data is insufficient to support listing as endangered or threatened.

Preble's shrew	Sorex preblei
Spotted bat	Euderma maculatum
North American wolverine	Gulo gulo luscus
North American lynx	Felix lynx canadensis
Trumpeter swan	Cygnus buccinator
Harlequin duck	Histrionicus histrionicus
Northern goshawk	Accipiter gentilis
Loggerhead shrike	Lanius ludovicianus
Western boreal toad	Bufo boreas
Spotted frog	Rana pretiosa
Leatherside chub	Gila copei
Jackson Lake Springsnail	Pyrgulopsis (Fontelicella or Amnicola) robusta
Jackson Lake Snail	Helisoma (Carinifex) jacksonense
Payson's bladderpod	Lesquerella paysonii

A number of these candidate species are known to have used the Snake River corridor. Trumpeter swans regularly winter in the riverine areas. There have been documented sightings of wolverine, lynx, harlequin duck, northern goshawk, and loggerhead shrike in the river corridor. The boreal toad, and probably the spotted frog, breed in the Schwabacher Landing area, and are likely to breed in other areas along the river corridor.

Closures

A number of seasonal closures and public use limits are in effect along the Snake River (National Park Service 1994). These include the following areas:

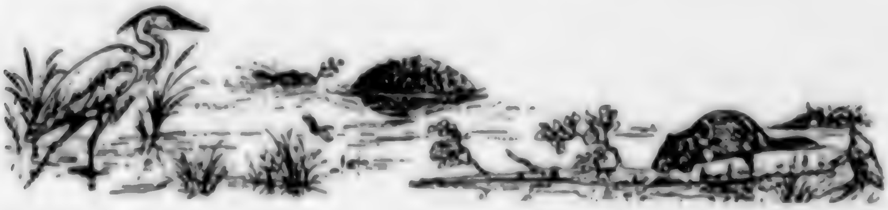
1 From December 15 to April 1, the Snake River floodplain from Jackson Lake Dam downstream to the Menor's Ferry crossing north of Moose, including the Oxbow Bend area, is closed to all oversnow use or travel for protection of wildlife during critical wintering or nesting periods.

2. To protect bald eagles during nesting and fledging periods, all lands within 1/2 mile of all bald eagle nests are closed from February 1 to August 15, when posted.

3. All lands within 250 yards of nesting sites of osprey, trumpeter swan, and great blue heron are closed from February 1 to August 20, when posted, to protect birds during nesting.

4. Cottonwood Creek is closed to fishing from November 1 to August 1 from the outlet of Jenny Lake to its confluence with the Snake River.

5. The Snake River for 150 feet below the downstream face of the Jackson Lake Dam is closed to fishing year-round.



CULTURAL RESOURCES

Cultural Resources Overview

People have used the Snake River Corridor since prehistoric times. Archeological surveys along the floodplain below the dam have been limited, although reconnaissance surveys have been completed for most of the corridor. Wright (1974) found no evidence of prehistoric man in an area north of Moose where a new sewage treatment plant was under construction. Love (1972) hypothesized that the Snake River was a barrier to travel from east to west for the prehistoric inhabitants of the valley. The archeological base maps from 1990 confirm this, as few archeological sites have been located in the area immediately west or east of the river, between Ditch Creek and Spread Creek. Most of the existing archeological sites near the floodplain are located to the east on terraces set back from the river. It is likely that regular channel changes would displace or destroy archeological material on the floodplain. Prehistoric campsites around lakes and the Snake River delta area above Jackson Lake provide the largest source of information concerning prehistoric life in Jackson

Hole. Further archeological surveys will continue to investigate and document the prehistoric cultural resources in the Snake River corridor.

Europeans first entered the valley to trade fur in the early 1800's. Undoubtedly, some individuals trapped beaver along the Snake River. Government expeditions and miners visited the valley during the period between 1850 and 1880. The first permanent Jackson Hole settlers arrived in 1884. Extensive prospecting occurred on the floodplain during 1880 to 1900. A number of placer claims were filed--mostly near Pacific Creek, Spread Creek, and Deadman's Bar. Evidence of old placer mining activity is most conspicuous in the Deadman's Bar area. None of the claims were patented and the area was withdrawn from mineral entry when the Monument was established in 1943.

The Snake River Corridor encompasses six areas which contain historic buildings and structures. The National Park Service is currently surveying and evaluating the extant historic resources of Grand Teton National Park to determine which resources are eligible for inclusion in the National Register of Historic Places. This formal determination of eligibility process should be completed in early 1997. The extant cultural resources near the Snake River are primarily early 20th century tourist-oriented facilities. Although there were homesteads and working ranches in the area, traces of these operations have been removed by the National Park Service.

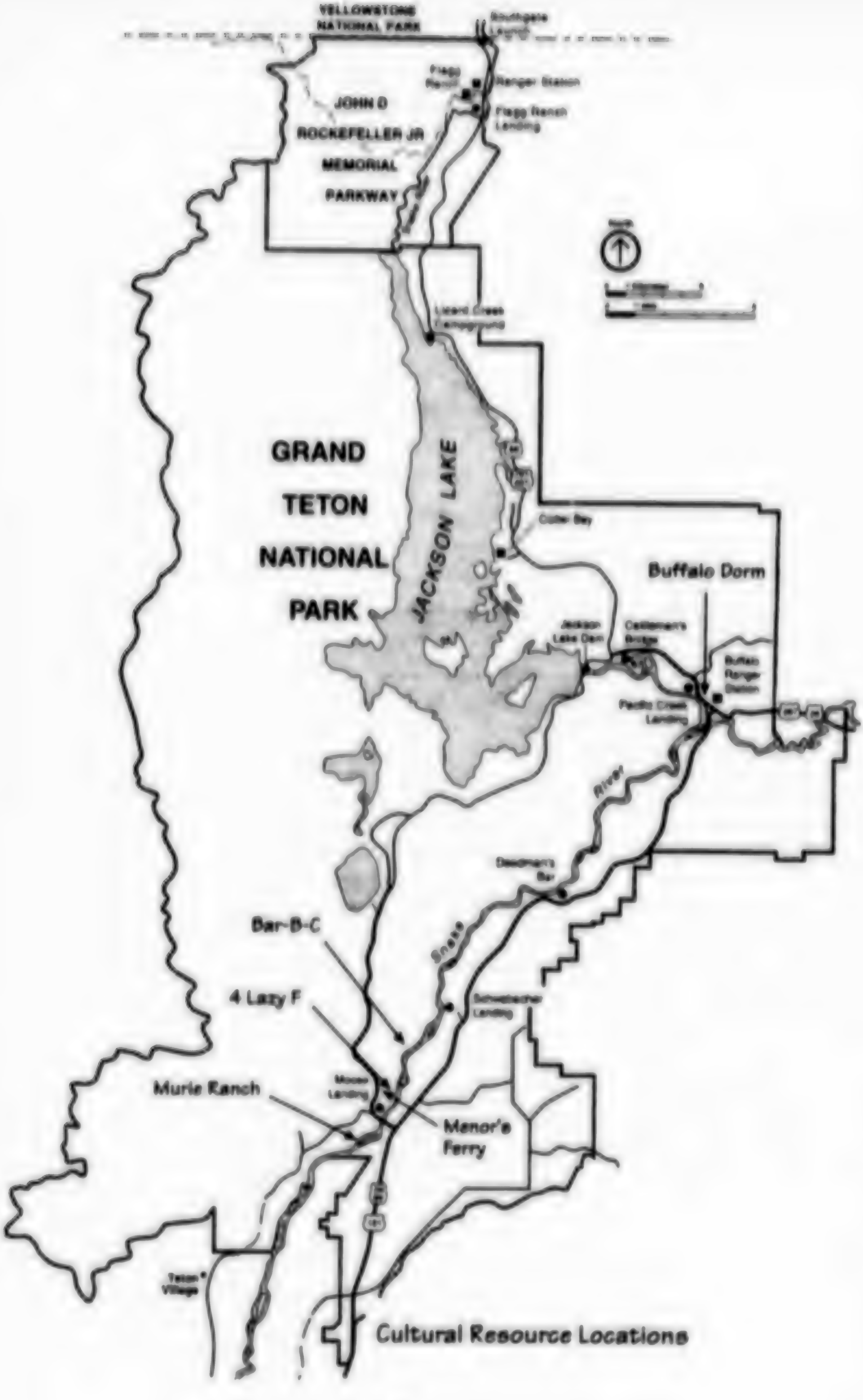
Park Policy Regarding Historic Sites in Riparian Zones

The legal mandates for management of cultural resources in the Snake River Corridor are specified in the NPS Floodplain Management and Wetland Protection Guidelines of 1980. These guidelines specify procedures to avoid long and short term adverse impacts associated with occupancy and modifications of floodplains. The guidelines also specify how to prevent direct or indirect support of development in floodplain. Grand Teton National Park has implemented policy and procedures to insure this mandate is carried out. Under these guidelines, cultural resources may be preserved in their natural and historic setting if the site possesses exceptional significance and is eligible for inclusion in the National Register of Historic Places.

Six Historic Sites in the Snake River Corridor

There are six areas with extant historic resources in the Snake River Corridor in Grand Teton National Park that are potentially eligible or already listed on the National register of Historic Places. The park will be preparing a cultural resource managment plan in the future to adress these properties in greater detail.

Cattlemans Bridge: Located in the Oxbow Bend area, Cattlemans Bridge has not been formally evaluated for the National Register of Historic Places. Constructed by the Potholes Grazing Association in the 1940s, the bridge is no longer utilized or maintained by that organization, as grazing has been discontinued in this area of the park. The bridge is in bad shape but continues to be used by fishermen and other visitors.



Cultural Resource Locations

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Hogan's Fox Farm (The Buffalo Dorm): This site, located near the Buffalo Entrance Station, is a group of four log structures that was originally a homestead but in 1926 was developed into a small dude ranch by John Hogan. Hogan built the large lodge building and three cabins to house up to twelve guests. The property was purchased by the Snake River Land Company in the 1930's. The property was used until three years ago as seasonal employee housing, but due to building code violations, now sits vacant . The National Register significance of this property is currently being determined. Preliminary findings indicate that the lodge building, which served as the main house, may be eligible under the criterion for architecture. The site may also be eligible for its association with the Rockefeller financed Snake River land Company. Preliminary historical research indicates this property was used as an administrative site by the Rockefeller organization. Any proposed treatment of the site must wait until the fall of 1996 when a complete site history and formal determination of eligibility is completed

The Bar-B-C Dude Ranch: The Bar-B-C is arguably the most famous of the Jackson Hole dude ranches, in large part due to the efforts of Struthers and Katherine Burt, the original ranch owners. Katherine Burt had influence in the early development of Hollywood western films and was instrumental in bringing Hollywood film makers to Jackson Hole. Struthers Burt was a writer who wrote stories in many national publications to lobby for the creation of Grand Teton National Park. Struthers was also a novelist,who's most notable book, *Diary of a Dude Wrangler*, documented his experiences at the Bar-B-C. The 1990 Teton Corridor Development Concept Plan determined that the issue of treatment of the Bar-B-C would be determined by the results of an Historic Structures Report (HSR). The recently completed HSR strongly recommended retention of the property and proposed an extensive and complete restoration of the ranch. The high cost associated with this plan, among other factors, make that recommendation not feasible. A site plan adressing the future of this site will be prepared as part of the cultural resource management plan.

The Four Lazy F Dude Ranch: This ranch, located on the Snake one mile north of Moose, was started by the Frew family, former patrons of the Bar-B-C, who decided to create their own semi-private dude ranch. This property is a life estate that will eventually revert to full NPS management. It is the best preserved of the early dude ranches and the only one still operating on the west bank of the Snake.

Menor's Ferry: This complex, which includes the Maude Noble Cabin, is the only historic site in Grand Teton National Park actively staffed and operated for public use and enjoyment. During the summer months, a replicated ferry is operated on the river and period merchandise is sold in the store. Menor's Ferry is located adjacent to the Snake River near Moose, a developed area. Menor's Ferry is a significant representation of early homesteading and the transportation frontier in Jackson Hole. Bill Menor was the first homesteader on the east bank of the Snake River north of Jackson in 1894, where he established a small store and ferry operation. The Snake River was a barrier to crossing, and therefore to settlement on the east side of the river until Menor built his ferry. In 1918, Menor sold the operation to Maude Noble and a Mr. Sandell. (Two different first names have been found in the literature.) Maud Noble's cabin on Cottonwood Creek was moved to its present location in 1918. She operated the ferry until 1927, when a steel truss bridge was built across the river. Noble sold the 149 acre property to the Snake River Land Company in 1929. In 1949, the Jackson Hole Preserve Inc., under the sponsorship of J.D. Rockefeller Jr., restored Bill Menor's cabin and reconstructed the ferry. The property was turned over to the National Park Service in 1953, and placed on the National Register of Historic Places in 1969.

Bill Menor's cabin is the most significant building within the compound, as it is one of the oldest structures in the park. The cabin functioned as ferry office, store, and residence. Original structures on the site include Menor's cabin, two associated utility buildings and the Maud Noble Cabin. Reconstructed facilities include an outhouse, a wellhead, the cableworks, and the ferry. The museum and transportation shed were probably built in the 1950s by the Snake River Land Company for interpretive purposes (Carson 1964). A small log cabin moved from another location in the late 1940's was developed into a small museum. The museum houses an eclectic collection, including a "bull boat" fashioned from buffalo hides and a dog sled. A variety of freight wagons, passenger coaches, carriages and other vehicles are displayed in the transportation shed. An archaeological survey was completed on this site in 1990, with no significant findings. Located in the Menor's Ferry area, the *Chapel of the Transfiguration* is a private inholding, listed on the National Register of Historic Places in 1980s. The building is owned by the Episcopal Church. Church services are conducted there in the summer. This document proposes no changes to the status or use of this property.

The Murie Ranch: This ranch was listed on the National Register of Historic Places in 1988. However, only the residence and studio associated with Olaus Murie were considered significant in that nomination form. The National Register nomination form is currently under revision to include the significant roles of Margaret Murie and Adolph Murie, the wife and brother of Olaus. The use of the cabins by the founders of the Wilderness Society which was headquartered at the ranch could now also be considered significant. A preliminary proposal for the development of a "wilderness research institute" to honor the Muries and their wilderness ideals is being developed in cooperation with the Teton Science School. Since the ranch is a life estate and still the property of the Murie family, this document proposes no changes to the status or use of the property. Further discussion and planning for the property will follow a long term schedule in cooperation with the Teton Science School and the Murie family.

RECREATION USE PATTERNS & TRENDS

Type of Use

Commercial river rafting accounts for the majority of recreational use on the Snake River. Non-commercial rafting, guided fishermen, private fishermen, kayakers and canoeists also travel the river. There are 16 commercial operators authorized to provide scenic float trips and/or guided fishing trips on the Snake River. Currently, there are no limits on numbers of guided fishing trips and existing limits on commercial float trips permit an approximate 48% increase in use over 1995 levels.

The commercial floating season corresponds with the summer visitor season in Grand Teton National Park. The highest use occurs between June 20 and August 20 and declines after Labor Day. Although there have been recent increases in visitation during the months of May, September and October in the park, inclement weather and low water at these times tend to restrict commercial float trips. Approximately 20% of visitors during 1995 floated the river during these off months.

Recreation Uses other than river floating

Other recreational uses that occur within the Snake River Corridor include; fishing and hiking along the banks, bird watching, driving or biking the RKO road, exploring the Bar B-C Ranch, viewing wildlife and scenery from the Oxbow turnout or other road-side pulloffs, and creating artwork such as painting. These types of recreation comprise a smaller percentage of use than actually floating or fishing on the river itself.

No hiking trails are maintained by Grand Teton National Park on the Snake River floodplain. Most hiking originates from the various road access areas and occurs along existing game or horse trails and abandoned roads. Although no estimates have been made, hiking activity in the area does not appear to be extensive.

Picnicking is permitted along the floodplain, but no developed pubic picnic areas exist. Probably for this reason, public use is not extensive. There are two designated commercial picnic sites at Deadman's Bar and one at Schwabackers which are used exclusively by float trip concessionaires. A developed picnic site exists on the floodplain west of Triangle X Ranch which is used by ranch guests. Another developed picnic site is located near Cattleman's Bridge which is used by the Grand Teton Lodge Company.

Three scenic turnouts located along the outside park road east of the Snake River receive considerable use during the summer by motorists who stop to look at and photograph the mountains to the west. The Snake River floodplain is in the foreground of this view.

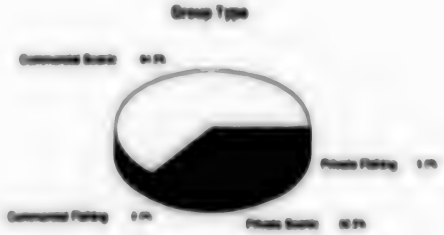
Horseback riding near the Snake River originates from Moosehead, Triangle X and Lost Creek dude ranches. Most riding occurs by guests in the vicinity of these three ranches.

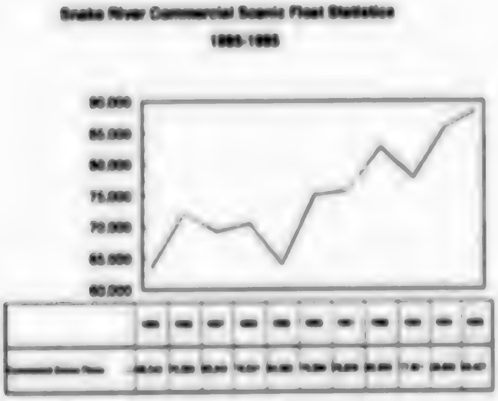
Commercial vs. Non-Commercial River Trips

River recreationists can be divided into two distinct user groups; commercial and non-commercial. Commercial users are paying guests on a guided trip. Non-commercial users are individuals who have the skill to undertake their own river trip. Slightly more than 67% of the river users in 1995 were on commercial trips. The remaining were non-commercial visitors. Of all river users, 64% were on commercial scenic float trips while 2.4% were on commercial fishing trips.

Commercial Scenic Floating

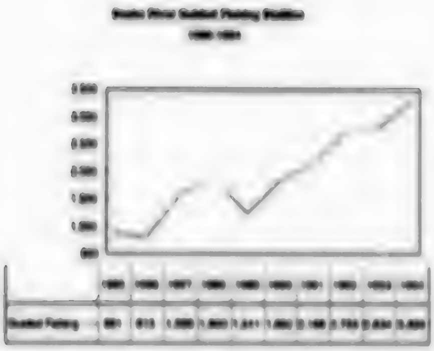
The number of people floating the Snake River with one of the commercial outfitters has increased steadily throughout the years. Since 1985, this use has increased over 39%.





Most float trips originate either at the Pacific Creek launch area or at the Deadman's Bar launch area, terminating either at Deadman's Bar or at Moose landing. Over 60% of the commercial scenic trips float the Deadman's Bar to Moose Section, while only 20% of the commercial scenic trips float Pacific Creek to Deadman's Bar. The distance of these trips varies from four to twenty miles, and the duration varies from slightly over one to six hours. There are currently 101 launches per day permitted from Pacific Creek Landing to Moose. There are 3 permitted launches per day from Moose to the Wilson Bridge. See appendix one for the current commercial operating guidelines.

Guided Fishing



The cutthroat trout population inhabiting the Snake River supports an important sport fishery. The population is maintained by natural reproduction, and no stocking of the river in the park is presently done. The trout fishing season runs from April 1 through October 31. Most fishing activity occurs when water flows and turbidities decline after the annual run-off, usually in late July or early August. Wyoming fishing regulations and license requirements apply within the park.

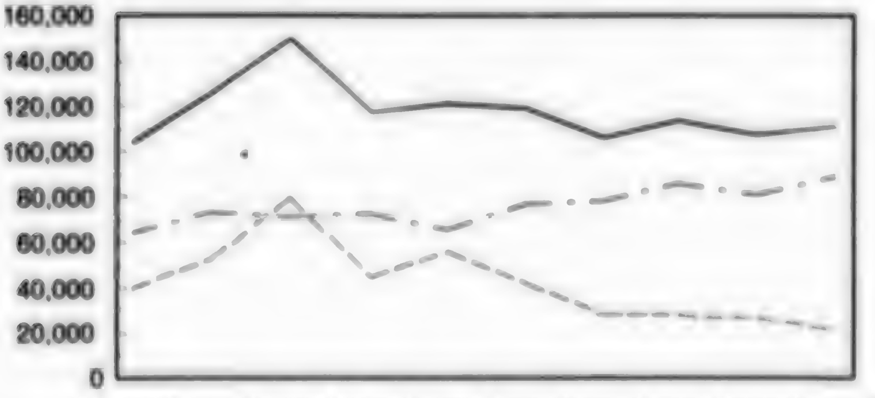
Commercial fishing outfitters have seen over a 230% increase in clients over the past 10 years. There are currently 13 fishing permitees who have unlimited use.

Growth in Use

The popularity of scenic float trips on the Snake River in Grand Teton National Park has increased in the last decade. Between 1985 and 1995, total annual float trip use (expressed as numbers of people participating) in the 25-mile section of the river between Jackson and Moose increased 6.8% (It should be noted that beginning in 1990, private float trips were counted using a voluntary trip permit system and it is estimated that only half of private floaters actually register). The greatest increase in overall float trip use occurred in 1987 at 44%. Since 1985, commercial scenic float trips have increased 39% and guided fishing trips have increased 230%.

Snake River Use Statistics

1985-1994



	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total —	104,209	125,373	150,078	117,641	121,599	119,072	106,264	114,003	107,380	111,318
Private —	39,775	52,235	79,240	45,174	56,276	42,121	28,389	28,586	26,725	22,110
Commercial —	64,434	73,138	70,838	72,467	65,323	35 76,951	77,875	85,417	80,656	89,208

Historic Use of the Snake River

Boating on the Snake River for recreation or transportation was occasional prior to the late 1940's. The boats available at the time were canvas-covered canoes or wooden rowboats which were not well suited for the river. With the availability of post World War II surplus inflatable rafts , boating became more common. Park regulations prohibit the use of motors on the river, and all boats used are hand-propelled.

Prior to 1957, boats were used primarily for fishing. By th 1950s fishing the entire river by boat had become popular. In 1956, the National Park Service began requiring those wishing to launch boats in Grand Teton National Park waters to obtain a non-fee boat permit.

Private use of boats on the river for sight-seeing (scenic float trips) probably occurred before World War II. In 1957, the Grand Teton Lodge Company began offering commercial scenic float trips; in 1959 they reportedly took 3,000 people down the river. It became apparent that scenic floating could become a lucrative business, and in 1963 several other commercial float trip operations began. Because of Park Service concern about possible loss of wilderness values and a question regarding preferential transportation rights in Grand Teton Lodge Company's concession contract, the park initially denied these operators the privilege of commercial float trip use within its boundaries.

The affected individuals appealed this decision to both the Department of Interior and to their congressional delegation. By a letter dated February 18, 1964, Assistant Secretary of the Interior John A. Carver, Jr., advised that the National Park Service would treat boat traffic on the Snake River within Grand Teton National Park as if the stream were navigable. This administrative decision provided for full emphasis on safety requirements for waterborne craft,but the management of river float operations was to be limited to the National Park Service s jurisdiction over the land up to the edge of the water. Subsequent opinion by Department of Interior solicitors indicated that federal ownership of all access along the river and regulations prohibiting commercial activities within a park, except under a permit (Sec. 36 CFR, 5.3), gave the National Park Service sufficient authority to regulate commercial float trip use.

Following what is now called the Carver Decision, the park put a non-fee special-use permit into effect in order to differentiate commercial from private use. Individuals desiring to enter the float trip business in Grand Teton National Park had only to apply for this special-use permit. By 1968 23 people had done so. In order to more fully conform with regulations governing commercial use in national parks, the National Park Service issued fee-type special-use permits in 1969 which imposed certain operational and administrative requirements on the operators. In 1972, the park changed over to a concession permit system for commercial float trips.

VISITOR SURVEY RESULTS

This section presents a summary of the results of visitor surveys conducted during the summers of 1990 and 1995. The purpose of these surveys was to obtain background information about visitors who use the Snake River and information regarding visitor expectations and perceptions about crowding on the river.

Summary of Results From the 1995 Visitor Survey

A random survey of river users was conducted during the summer of 1995. Over a three month period from June through August, 211 visitors were surveyed. Below is a summary of survey results.

Crowding and Other Conflicts

An issue identified early in this planning process was the need to evaluate appropriate river use levels. Specifically, it was deemed necessary to examine the perception that while the river may become crowded in the future, present levels of use are acceptable. The survey needed to either verify the accuracy of this perception, or to find out if present use levels are unacceptable.

To establish a reference point for a visitor's general perception of crowding, a number of park areas were presented on the survey for evaluation. Visitors were asked to assess an area based on the traditional letter grading system, with an A+ symbolizing the least crowded or most favorable, and an F- symbolizing the most crowded or least favorable.

For analysis, these letter grades were assigned values from 1 to 15 with A+ having a value of 15, B+ a value of 12, C+ a value of 9, D+ a value of 6 and F+ a value of 3.

15	14	13	12	11	10	9	8	7	6	5	4	3	2
A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F+	F

Figure 1 shows that overall, visitors gave the park a "B" for crowding. Different areas within the park received different grades. The majority of visitors, 92%, gave the Snake River a "B+". This was the highest score given on this section of the survey. Campgrounds received the lowest scores; 34% of the the visitors gave them a "C-", while 26% gave the campgrounds an "F".

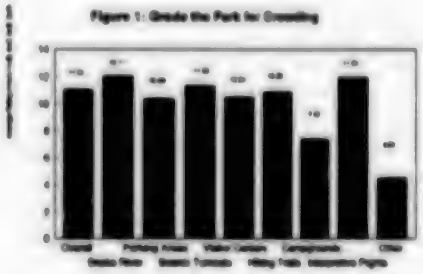
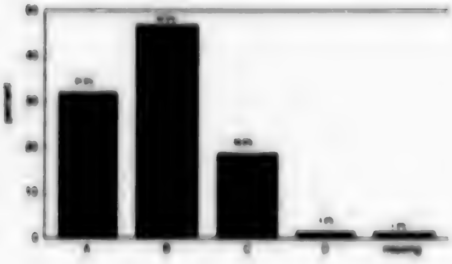


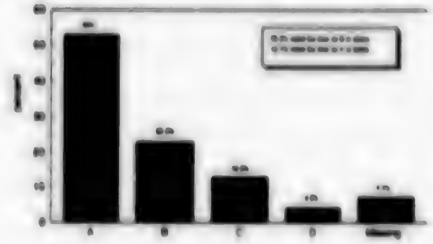
Figure 2 shows a summary of perceived crowding in all of the park areas combined. Overall 31.8% of the visitors gave the park an "A" average, with the majority of visitors giving the park a "B" average.

Figure 2: Overall Crowdedness Evaluation



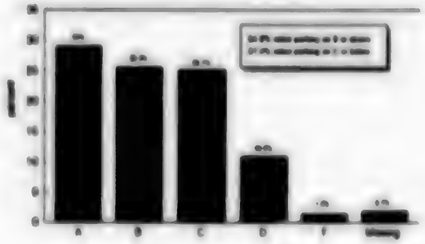
When the Snake River was analyzed separately from other areas within the park, over 53% of the responses gave the Snake River an "A", with over 75% at a "B" or above as shown in figure 3. The river was rated by 17.1% as a "C" or below.

Figure 3: Snake River Crowding



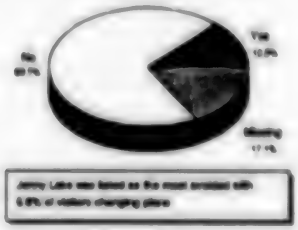
During public meetings regarding the Snake River Managment plan, parking congestion was identified as an issue. Figure 4 shows a summary of public response concerning parking area crowding, indicating that responses were evenly divided on this question. Over 54.6% rated parking a "B" or higher, while 37.4% rated it a "C" or lower.

Figure 4: Parking Area Crowding



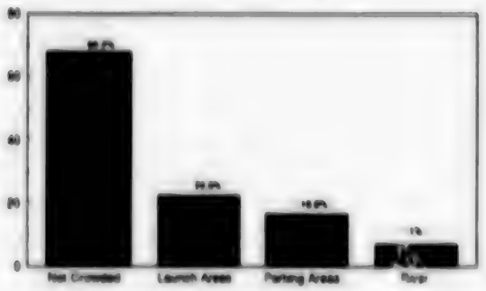
The survey asked visitors if they had changed their plans because of crowded conditions in the park, and if so, where the crowding had occured. Figure 5 shows that over 69% stated they did not, while 13.3% did. The Jenny Lake area was the most frequently mentioned with 5.6% changing their plans to visit that area because of crowded conditions.

Figure 5: Change Plans due to Crowding



Visitors were next asked if they felt that any areas of the river were crowded, if so which ones, and if that crowding affected their trip. The results described in figure 6 show that almost 70% rated the river as not crowded. Launch areas were mentioned by 22% as crowded, followed by parking areas mentioned by 16%. Only 7% mentioned the river itself as being crowded.

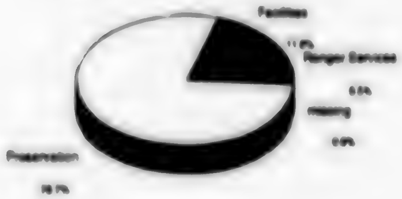
Figure 6: Rate Crowding



Emphasis for Future Planning

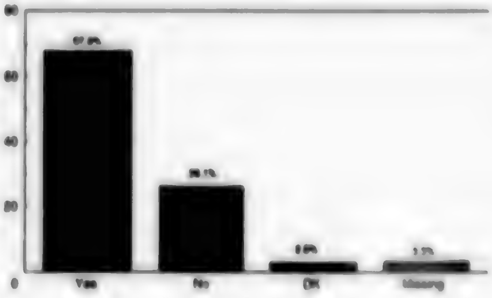
To assist park management in determining what the park should emphasize in planning for the river corridor, visitors were asked to rate, in order of preference, facility development, ranger services and preservation. Figure 7 shows preservation is the number one priority the public believes the park should emphasize in its preparation for the future.

Figure 7: Emphasis for the Future



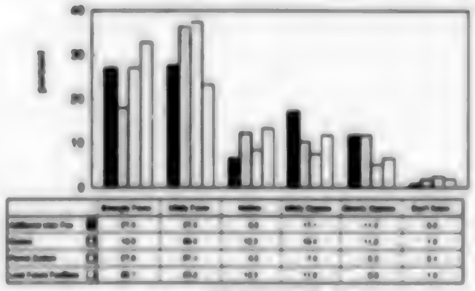
While the majority of visitors felt current river use levels are acceptable, this planning process will determine future use of the river. Visitors were asked if future restrictions on their use of the river would be acceptable to create less crowded conditions. Figure 8 shows visitors overwhelmingly supported future restrictions on their own use to create less crowded conditions, with almost 70% responding yes.

Figure 8 : Support Future Restrictions to Reduce Crowding



A follow-up question asked visitors to specifically rate potential control measures. The majority supported all measures. User fees were the most disliked, with 17% mildly opposing additional user fees. Figure 9 shows the summary of results for this question.

Figure 9: Crowd Reducing Alternatives



Note: #'s are percents

Visitor Characteristics

One intent of this visitor survey was to understand the characteristics of visitors who use the river. The average age of river users is 45 years old. Half of those surveyed were from 37 to 54 years of age. Eighteen percent of the visitors surveyed were from Jackson, Wyoming. Wyoming residents account for 23% of the sample. The mountain states census region added up to 42% and Californians represented 11% of the users. All regions throughout the United States were represented to some extent. The majority of visitors were using the river for the first time and 37% rated their floating and fishing skill level as novice.

Figure 10: Number of Trips as a Passenger

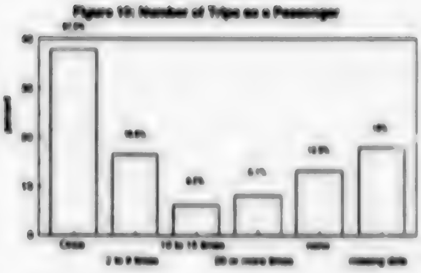


Figure 12: Number of Trips as a Guideman

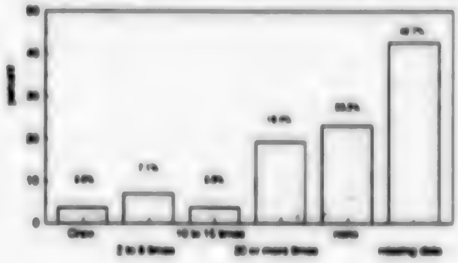
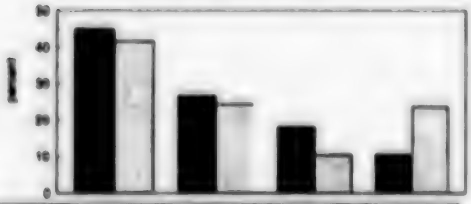


Figure 11: Skill Level



	novice	intermediate	Expert	missing
floating ■	45.0	26.5	18.0	10.4
fishing □	41.7	24.2	10.4	23.7

Note: #'s are percents

Summary of Results From the 1990 Visitor Survey

A survey was conducted in the summer of 1990 by personnel of the Cooperative Park Studies Unit, from the graduate school of the City University of New York. The survey was conducted over a five day period in late July, 1990. Visitors were randomly contacted at locations designated by Grand Teton National Park managers. The interviews were conducted at landings along the Snake River, at the Gros Ventre campground, the Moose Visitor Center and Jenny Lake.

Interviewers stopped 263 visitors during the survey period and completed 241 interviews, a response rate of 92%.

The responses to several of those questions can be compared to results from the 1995 survey. Specifically, visitors in 1990 were asked the following question concerning control of future use:

"The growing popularity of Snake River fishing and floating trips means Grand Teton National Park must consider ways to protect the quality of the wildlife and other resources as well as the quality of the visitor experience. What are your feelings about controls over Snake River traffic inside the National Park? (Such as limiting the number of commercial fishing trips; mandatory permits; limits on floats on some sections of the river.)

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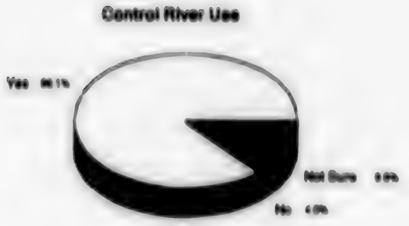
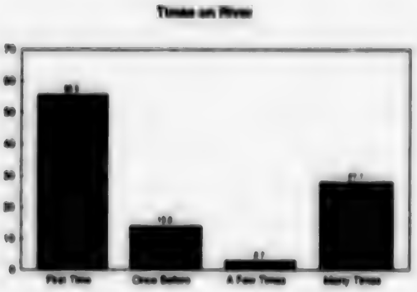
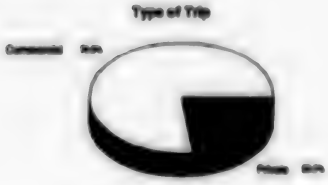
Over 86% of the visitors surveyed in 1990 supported future controls as compared with 67% in 1995.



Visitors were also asked how many times they had floated the river. Over 55% were on their first trip in 1990 as compared to 37% on their first trip in 1995.



Data was also gathered concerning type of trip. Over 76% of the visitors were on commercial trips as compared with 66.7% in 1995.



EXISTING ACCESS AREAS

There are six areas between Jackson Lake Dam and Moose that provide easy access to the Snake River. Visible impact to vegetation has occurred in all these areas. Vegetation is rapidly eliminated by vehicles where no control of traffic or well-designated roads exist. Heavy pedestrian traffic has also resulted in loss of vegetation in some areas. The following describes the existing conditions of these sites.

Jackson Lake Dam Area

After reconstruction of the Jackson Lake Dam in the late 80's the access to the area was redesigned, providing direct vehicle access to the north side of the river. A 27 car parking and picnic area was developed and was intended to provide fisherman access to the dam area with the parking area adjacent to the river removed. Since that parking are was never removed the majority of fisherman and users of the area park along side the river. On the south side of the river, vehicular access was removed with pedestrian access provided from a parking area adjacent to the south side of the dam.

Visitor use in this area is intensive--most occurring within 2000 feet of the dam. Angler use has averaged over 10,000 days annually since 1980 and boat launchings average about 1,200 per season. Considerable traffic by motorists for sightseeing purposes also occurs. This area is the most heavily used and congested along the river. Motorists often park in the launch area, blocking access to the river for those wanting to put-in. The area immediately adjacent to the river is completely devoid of vegetation and the number's of cars of very visible to those traveling along the park road.

Jackson Lake Dam

Pacific Creek

A paved road, boat launching site and parking area are provided at Pacific Creek. Approximately 14 commercial scenic boats per day are launched at this site, or 20% of the commercial operations. The layout of the launch area works well, however there is erosion occurring on the steep bank by the launch area, and the asphalt is beginning to unravel. Problems with launching occur when water levels decrease due to gravel build up. Periodic removal of small amounts of gravel has been done by the park periodically to maintain an adequate launch area.

Pacific Creek Launch

Cattleman's Bridge

An unmarked dirt road provides access to the cattleman's bridge area. This primitive area provides access to the river primarily for fisherman and sightseers. Some boat launching does occur, by mainly by canoeist using the Oxbow bend area. There is limited site distance at the junction of the access road and the main highway.

Deadman's Bar

Vehicle access is by a narrow, steep and partially paved road about 0.7 miles long. An average of 41 commercial boats launched per day during the 1995 season. Parking is often confusing and disorganized as well as congested. Like at Pacific Creek, during low water gravel often builds up impeding launching. There are two vault toilets at this site that often have long lines when commercial operations bring large numbers of clients at once.

There are two meal sites adjacent to the launch area. One used by the Boy Scouts and one used by the Grand Teton Lodge Company.

Deadman's Bar

Lower Schwabacher

Access to Lower Schwabacher is by a 1.1 mile gravel road which becomes very dusty in mid-summer. The parking and launching areas are not paved, but are delineated by large boulders. The area is used primarily as a boat launching site and for fishing access. Other visitors also occasionally use the site.

Schwabacher's Landing

Moose

The Moose access are is located east of, and adjacent to, Grand Teton National Park headquarters. Most float trips terminate here and use is intensive. Several commercial scenic operator's meet their clients here.

Moose Landing

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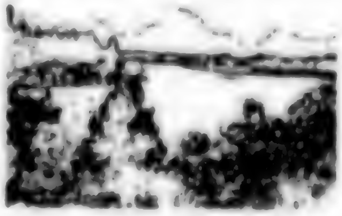
PART FOUR, PLAN ALTERNATIVES



"Silver, brilliant in evening light, the river master surfaced, rolled forward like a diminutive dolphin, and disappeared forever from my sight. A brief acquaintance, the fish was there and gone in one plunging instant." Tim Palmer, Lifelines - the case for river conservation

PART FOUR, PLAN ALTERNATIVES

This section groups the values, concerns, and wishes expressed by the public, NPS staff, and other government agencies into a set of preferred conditions, and outlines five alternatives.

Desired Future Conditions

The conditions listed below form the foundation of the Snake River Management Plan, building upon the goals set forth in Grand Teton National Park's General Management Plan, Statement for Management, and public input. These conditions will serve as the reference point for all programs and activities the NPS will undertake within the river corridor; they establish the standard for resource conditions. The success of this plan can, therefore, be measured by the extent to which it fulfills the following objectives for natural and cultural resources, recreational experience, outfitting and public access and launch sites:

Natural and Cultural

- The natural functions of plants and animals, as they relate to the Snake River, are preserved and enhanced.

- There is adequate baseline data available upon which to make sound management decisions.

- Wildlife habitat for threatened, endangered, and sensitive species is identified and protected.

- Deer, elk, moose, otter, beaver, osprey, waterfowl, raptors, amphibians, and a variety of songbirds can be observed in their natural environments.

- The bald eagle population is not adversely affected by river use.

- The fishery in the river is stable and thriving.

- The effects of the dam and water flow on the river system are understood and controlled to protect both the natural resources as well as the recreational experience in the river system.

- Water quality is regularly monitored and remains high.

Recreational Experience

- Recreation opportunities such as scenic floating and fishing are provided for within the Snake River Corridor, where consistent with natural resource preservation.

- A variety of options are available to float the river; private boats, commercial tours, rental boats, and fishing guides.

- All private users are aware of river conditions and the skills required to safely complete the float.

Outfitting

- Commercial trips are planned to avoid congestion at launch sites.

- Outfitters share river use responsibly, and help clients gain a better appreciation of river resources and ethics through educational and instructional trips.

- There is no illegal outfitting.

Launch Sites

- Launch sites are organized, with adequate parking and launch facilities. The sites are uncongested but not overdeveloped.

The Five Alternatives

Common Guidelines for All Five Alternatives

While factors relating to each alternative vary, each is roughly divided into three sections; recreational use, launch areas and natural resources. Regardless of which alternative is selected, there are a number of guidelines which are presently, and will continue to be, in effect. These guidelines include:

- Existing closures to protect wintering and nesting wildlife;

- On-going wildlife monitoring efforts;

- Safety regulations and licenses, for river users;
- Yearly boat registration for non-commercial river users;
- Operational and administrative requirements for commercial boating and fishing companies;
- Commercial use permits and regulations will be in effect anytime the river is open to the public;
- Routine maintenance, such as garbage collection and maintenance of privies, roads, and launch areas;
- All law enforcement regulations such as prohibitions on off-road driving and overnight camping.
- The Pacific Creek launch site will be stabilized (Water has undercut the bank so severely at Pacific Creek landing that the boat launch has become unstable and difficult to use. Further engineering and hydrology studies will be needed following the completion of this plan to determine what actions are necessary. In addition, the parking area at Pacific Creek will be stripped to better define parking.);
- Required actions outlined in other park management plans, such as the Human/Bear Management Plan, the Grazing Management Plan, or the Natural Resources Management Plan.;
- A removable walkway system will be developed to be used when the river is low (This will make walking on the cobbles easier for visitors and reduce safety concerns). Investigation and research needs to be conducted by park landscape architects to determine the most appropriate system, design and materials.);
- No motorized craft allowed on the river;
- Equipment requirements will continue for commercial outfitters and be implemented for private users (refer to appendix one for a complete description of minimum equipment requirements;
- A commercial shuttle service will be available for private river users.

Alternative One: No Action

The no action alternative would allow public use of the Snake River to continue in the same patterns of use and growth and under the same restrictions as are presently in effect.

Recreational Use

Commercial use of the riparian areas would continue at present authorized levels. No additional commercial operations (i.e. float trip concession permits) would be authorized: only existing levels of permitted use would be allowed. This would provide for the possibility of 104 commercial scenic trips per day, which is a 48% increase over 1995 use levels. In line with current policy, there would be no limitations placed on existing guided fishing operations.

Growth of non-commercial recreational use would remain unrestricted, except by the physical constraints of the launch areas and parking lots.

Commercial float trip operators would abide by current administrative and contractual requirements. Rules about designated launching, landing and lunch stop sites would continue. Stopping commercial boats at non-designated locations along the river would still be prohibited and restrictions about meeting passengers on park lands would remain in effect. Additional administrative and operational requirements that would remain in effect include monthly reporting of operations, boatman qualifications, equipment standards, provision of an interpretive program to the public, safety requirements and Park Service approval of prices.

Hiking and picnicking along the river would continue to be restricted due to lack of developed facilities.

Launch Areas

Except for routine maintenance, no improvement would occur at the launch areas.

Mechanical removal of portions of in-stream gravel bars would be limited to 25 cubic yards or less in compliance with the US Army Corps nation-wide permit.

Existing signs and barricades would be replaced as necessary. No new access areas or roads would be developed in the floodplain, although some existing sites may be relocated, as dictated by natural changes in the river channel.

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Natural Resources

Existing closures would remain in effect to protect wintering and nesting wildlife and spawning fish. Efforts to monitor activities for nesting eagles, herons, osprey, trumpeter swans, raptors, and amphibians would continue at present levels.

Water levels in the river would be managed as they are now.

Use of the riparian area by horses and other livestock would be subject to the restrictions stated within other park documents, such as the Natural Resources Management Plan and the Grazing Management Plan.

Concession companies would be required to bear-proof all lunch stop sites and educate all float trip employees about securing objects that would attract a bear, in the ways described in the Human/Bear Management Plan.

Alternative Two:

Recreational Use

Commercial scenic float use levels of the riparian areas would be capped at 78 permitted launches per day. This would allow for a 10% increase over 1995 use levels. In addition, guided fishing use would be capped at 14 launches per day, also a 10% increase over 1995 use levels. Specific numbers of launches per company would be defined in the concessions operating plan and each company's individual use allocation. The reserve allocation system would no longer be used. No additional commercial operations (i.e. float trip or fishing concession permits) would be authorized.

One of the issues identified in the planning process was crowding at launch areas. Field observations during the 1995 operating season revealed that most of the crowding occurs when several commercial operators use the areas simultaneously, or when large private or commercial groups are launching. Congestion occurred between 9 and 10 a.m., and between 1 and 2 p.m., for launching and down river at the take outs. The majority of time, the launch areas were vacant. Better scheduling to distribute use throughout the day, and limiting commercial launches to 3 boats per group, could help alleviate many crowding conflicts. This alternative varies concessionaire use of launches and take-out areas and spaces out launching times throughout the day on a voluntary basis.

The majority of scenic commercial trips (60%) float the section of river from Deadman's to Moose. Use of the Pacific Creek to Deadman's section would be encouraged to help spread out use further. Fishing guides would be encouraged to spread out their use of the river to include the Moose to Wilson run. If congestion continues, then specific launch times and group size limits would be assigned through the concessions operating plan.

Rules concerning designated launching, landing and lunch stop sites would continue. Stopping commercial boats at other than designated locations along the river would be prohibited and present restrictions for meeting passengers on park lands would remain in effect. Concessionaires would be encouraged to utilize the Snake River overlook as a meeting place if congestion continues at Moose. Other administrative or operational requirements remaining in effect include monthly reporting of operations, boatman qualifications, equipment standards, provision of an interpretive program to the public, safety requirements and Park Service approval of prices.

If use levels remain consistent or drop, no restrictions would be made on growth of non-commercial recreational use other than the physical constraints of the launch areas. Private use would not be limited in any way other than by lack of developed facilities. If use exceeds the standards defined in chapter 5, limits on private use would be explored.

Launch Areas

Under Alternative Two, changes would be made to launch areas in addition to Pacific Creek landing to alleviate congestion and reduce resource impacts. Gravel removal in excess of 25 cubic yards is proposed at Pacific Creek, Deadman's Bar and Moose landings to allow boat launching and landing when gravel accumulates. If this alternative is selected, appropriate permits would be required from the Army Corps of Engineers and State Department of Environmental Quality. Discussions of launch areas are conceptual in this plan. If this alternative is selected, site specific design work would have to be completed with additional environmental analysis.

Jackson Lake Dam

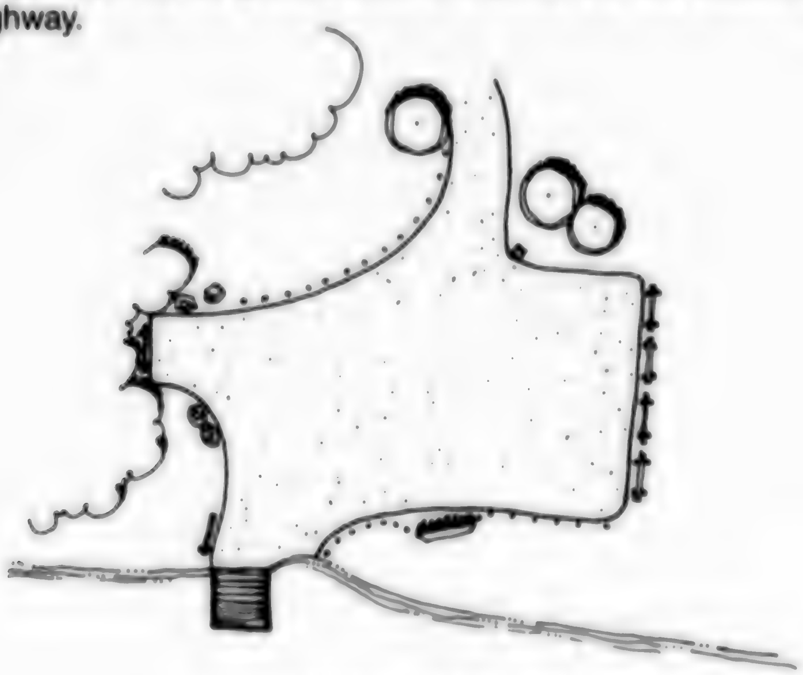
During the 1980s, when the Jackson Lake Dam was reconstructed, the area now used for parking and boat launching was the construction staging area. At that time, a schematic site plan was developed to rehabilitate much of the disturbed area while providing access to the river. While this plan was only partially implemented, the concepts developed are still valid. Therefore, this alternative proposes to adopt that conceptual design. The intent of the design was to provide pedestrian access to the river for a variety of uses including fishing, walking, picnicking or just sitting and enjoying the environment. Parking for vehicles would be provided in the area just north of the river which has tree's for shade and provides some separation from the river bank. A walkway would be built to provide easy access from the parking lot to the river. In addition, access would be provided for the loading and unloading of small boats.

Cattleman's Bridge

Launch/Parking: This alternative proposes to maintain the primitive environment at cattleman's bridge but develop an accessible launch site for those wishing to explore the Oxbow area. The intent is to keep development at the site to a minimum. The topography provides easy access to the river with minimal environmental effect; this site is appropriate for the disabled because users can launch and return to the same spot. Configuration and use of Cattleman's bridge launch would continue as it exists currently. Minor changes would include delineation of circulation and parking with rock, wood bollards and barrier logs. An area would be provided for backing more efficiently to the river access. Areas not necessary for circulation and parking would be revegetated.

Bridge: The bridge poses a serious safety hazard. This alternative proposes to remove most of Cattleman's bridge, except for a small section which extends over the river, and the northern abutment of the bridge. This would allow fisherman and wildlife observers to continue to use the bidge, but leave most of the river channel clear. Partial removal preserves an element of the bridge and provides a tangible reminder of the early ranching days in Jackson Hole. The remaining section of the bridge would be stabilized.

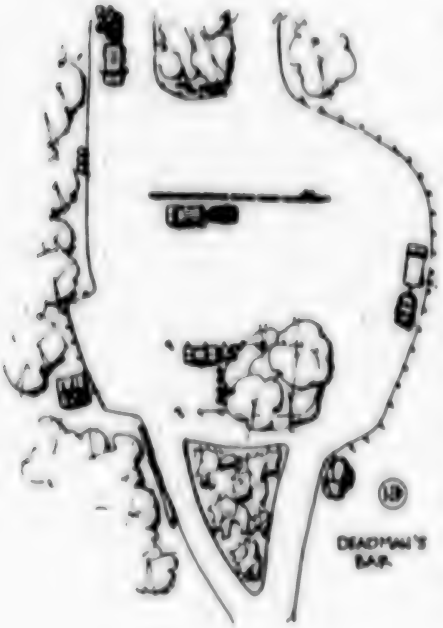
Access Road: There is limited site distance at the junction of the access road to cattleman's bridge and the main road. This road will either be realigned or the small hill at the junction will be graded back to improve the site distance for those entering the main highway.



CATTLEMAN'S BRIDGE
ALTERNATIVE

Deadman's Bar

The use patterns at Deadman's Bar would remain unchanged. The addition of bollards and horizontal logs would provide better delineation of the parking area. In addition, the approach on the north end of the parking lot would be expanded slightly to accommodate van/trailer temporary parking for those waiting to access the launch ramps.



Restroom facilities would be developed to replace the existing outhouses.

Schwabachers Landing

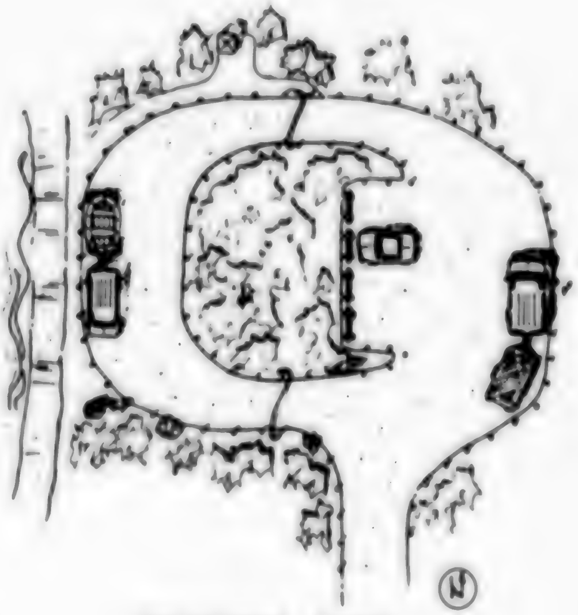
An upgraded lot is proposed for Schwabachers Landing, to enhance vehicle circulation and parking. This alternative redesigns the entire parking and circulation scheme for a loop of counter clockwise traffic flow. Horizontal logs would delineate vehicle parking on the western edge of the upper lot (right side of the plan) while allowing to the east traffic flow and a waiting/staging parking area for vehicles with trailers. The lower lot, adjacent to the river would be a double wide lane that allows for temporary parking as well as thru traffic. Again, vertical logs and placed boulders would define vehicle boundaries.

Moose Landing

This alternative proposes no changes in the Moose landing and parking area.

RKO Landing

Under this alternative, minor improvements to the road would be proposed to reduce the number of deep potholes in the roadbed. Minor improvements would be made to eliminate potholes in the parking area. No increase in current use is proposed and no commercial use of this site would be permitted.

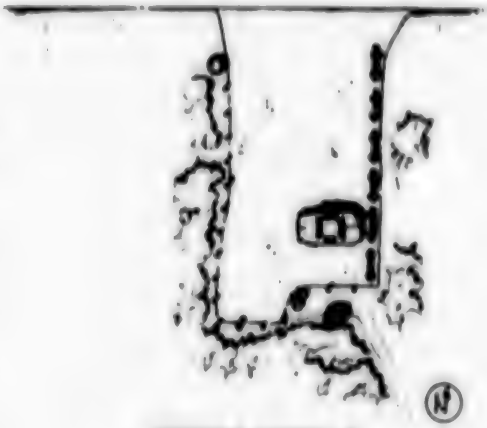


SCHWABACHER LANDING ALTERNATIVE

Worm Hole

This alternative proposes to widen the parking area slightly to allow for head-in parking on the eastern edge of the lot. Parking would be delineated by horizontal log parking blocks, and the lot would be delineated by a combination of vertical log bollards and placed boulders. A "hammerhead" backing area would be added to assist in pulling out of the parking spaces.

Natural Resources



WORMHOLE PARKING & FISHING ACCESS

Alternative Two would handle natural resources the same way as Alternative one, with the following exceptions:

- A system would be developed and implemented to monitor effects of visitor use on vegetation. A revegetation plan would be developed to mitigate any changes to vegetation from visitor use. Trails at the launch areas would be clearly defined to eliminate the use of undesignated trails.

- Grand Teton National Park would continue to work with the Bureau of Reclamation on the Minimum Stream flow Study now under way to understand and mitigate the dam's effect on water flows as it relates to recreation, hydrologic process, fisheries and water quality.

- The water quality monitoring program would be continued.

- A research and monitoring program would be developed to gather information on river otter population and how visitors effect that population.

- A research and monitoring program would be developed to determine how lack of flushing flows due to the dam effect cottonwood communities.

Alternative Three

This alternative proposes to keep use consistent with 1995 levels.

Recreational Use

Commercial use of riparian areas would continue, with the following provisions:

- The reserve allocation system would be abolished and permitted levels of daily launches would be allowed at 1995 levels. This would cap daily scenic float launches between Jackson Lake Dam and Moose at 70, and between Moose and Wilson at 3.

- Scenic concession float trips would be assigned specific launch times and locations during the day designed to spread out use and reduce congestion. Exact times and launch locations would be determined in the concession operating plan.

- Scenic float trip concessionaires would no longer be allowed to park their vans and trailers at the boat launches.

- Use of rafts that require special put-in or take-out facilities would be phased out over a five year period. This would open up additional ramps at Moose to both commercial and private users.

- All concession-operated riverside picnic sites would be removed and rehabilitated. These sites are presently located at Schwabacher Landing, Deadman's Bar, and across the highway from the Triangle X Ranch. The picnic sites were originally developed when the majority of river trips floated from Pacific Creek to Moose. This was a much longer trip than is taken today, so the need for food to be provided on these trips is no longer necessary.

- Guided fishing would be capped at 1995 use levels, allowing for 13 launches per day.

Non-commercial use would comply with the following:

- In order to further protect wildlife, the Oxbow Bend would be closed to boating except for the main channel of the Snake River.

- The upper Bar B C spring creek would close to fishing and a spawning habitat restoration project would begin, as recommended by the Wyoming Game and Fish Department (see Appendix 2).

- A monitoring system would be developed and put in place. When non-commercial use exceeds standards outlined in chapter 5, a permit system would be put in place limiting the number of private boaters allowed on the river per day.

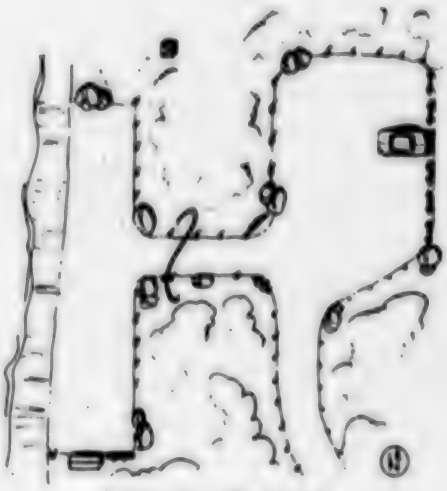
Launch Areas

Alternative Three proposes the same changes to the launch areas as Alternative Two, with the following exceptions:

- Mechanical removal of in-stream gravel bars would be limited to 25 cubic yards or less.
- The bridge, launch area and road to Cattleman's Bridge would be removed and rehabilitated. This site is located in sensitive wildlife habitat and removal would reduce habitat damage from visitors.
- This alternative proposes minimal upgrades to Schwabacher's landing by "cleaning-up" the configuration of parking and circulation. Barrier logs would define the parking spaces, while vertical log bollards and placed boulders would define the vehicle boundaries.

Natural Resources

The wildlife monitoring program presently in effect for great blue herons, bald eagles, trumpeter swans, osprey, and amphibians would expand to include species of wildlife such as piscivorous (fish-eating) birds and river otters. Vegetation, soil erosion, and water flows would also be monitored. The area of the upper Bar B C spring creek would be closed to fishing, and a spawning habitat restoration project would begin, as recommended by the Wyoming Game and Fish Department (See Appendix 2). Once pertinent data is collected, additional closures along the river bank would be proposed to protect habitat for a variety of species including: osprey, eagles, great blue herons, moose, elk, bear, river otters and other nesting birds.



SCHWABACHER LANDING

Alternative Four:

This alternative proposes to modestly increase permitted use.

Recreational Use

- Commercial scenic float use levels of the riparian areas would be capped at 115 permitted launches per day. This would allow for a 10% increase over existing permitted use levels, or an estimated 64% increase over 1995 use levels. In addition, guided fishing use would be capped at 17 launches per day, a 30% increase over 1995 use levels. Specific numbers of launches per company would be defined within the concessions operating plan and within each company's individual use allocation. The reserve allocation system would no longer be used. No additional commercial operations ,(i.e. float trip or fishing concession permits), would be authorized.

- Scenic concession float trips would be assigned specific launch times and locations designed to spread use throughout the day and reduce congestion due to increased use. Exact times and launch locations would be determined in the concession operating plan.

- Scenic float trip concessioner's and fishing guides would no longer be allowed to park their vans and trailers at the boat launches.

- There would continue to be no restrictions on private use if growth does not exceed 20% over 1995 use levels. If use exceeds this or the exceeds standards defined in chapter 5, limits on private use would be explored.

- Rules concerning designated launching, landing and lunch stops would continue with the following exception. There would be no stopping and disembarking allowed on the river by any commercial operation, including fishing guides.

- Passenger Meeting Points: Passengers may not be met on any lands under the jurisdiction of the National Park Service. Passengers may be met at lodging concession facilities within the park, only if prior arrangements are made with the concessioner.

Launch areas

Alternative Four proposes the same changes to the launch areas as Alternative Two.

Natural Resources

Alternative Four proposes the same actions concerning natural resources as Alternative Two.

Alternative Five:

This alternative proposes to divide the river segments into zones representing different types of visitor experiences.

Recreational Use

This alternative defines use levels for the following segments of the river:

Jackson Lake Dam to Pacific Creek Landing: The experience of floating from Jackson Lake Dam to Pacific Creek would be a solitary wilderness experience. Visitors would see few, if any other boats on this segment. Use would be restricted to private user's only. If use levels remain consistent or drop, no restrictions would be made on private user's. If use exceeds the standards defined in chapter 5, limits on private use would be explored.

Pacific Creek to Deadman's: Floating this section of river would remain a wilderness experience. However some encounters with other floaters or fisherman would be expected. Commercial scenic float trips would be capped at 14 launches per day, which is a 7% increase over 1995 levels. Guided fishing trips would be capped at 6 launches per day. As in the above section, if private use exceeds the standards defined in chapter 5, limits on private use would be explored.

Deadman's to Moose: Floating this section of river would be a scenic recreational experience. Frequent encounters with other floaters and fishermen would be expected. Commercial scenic float trips would be capped at 56 launches per day and guided fishing trips would be capped at 8 launches per day. This is a 30% increase over 1995 use levels . As in the no-action alternative, there would be no restrictions on private floaters, except perhaps the lack of developed facilities.

Schwabackers to Moose: Floating this section would be similar to the above. Commercial scenic float trips would be capped at 11 launches per day, a 30% increase over 1995 use levels.

Moose to Wilson: Floating this section would continue to be a solitary experience. Floaters can expect to see few others along their trip. Commercial scenic float trips would be capped at 5 per day, a 40% increase over 1995 levels. Fishing of this section would be unrestricted, except by regulations imposed by Wyoming Game and Fish.

Actions common to all river sections:

- Rules concerning designated launching, landing and lunch stops would continue with the following exception. There would be no stopping and disembarking allowed on the river by any commercial operation including fishing guides.

- Passenger Meeting Points: Passengers may not be met on any lands under the jurisdiction of the National Park Service. Passengers may be met at lodging concession facilities within the park only if prior arrangements are made with the concessioner.

- Scenic concession float trips would be assigned specific launch times and locations during the day designed to spread out use and reduce congestion due to increased use. Exact times and launch locations would be determined in the concession's operating plan.

- Scenic float trip concessioner's and fishing guides would no longer be allowed to park their vans and trailers at the boat launches.

- Total launches under this alternative would be 86 per day or a 23% increase over 1995 use levels.

Launch Areas

Alternative Four proposes the same changes to the launch areas as Alternative Two.

Natural Resources

Alternative Four proposes the same actions concerning natural resources as Alternative Two.

Comparison of the Alternatives

	Alternative One	Alternative Two	Alternative Three	Alternative Four	Alternative Five
Use Levels					
• Guided Scenic	104 launches/day; 48% increase over 1995 levels.	78 launches/day; 10% increase over 1995 levels; no reserve allotment; voluntary scheduling to reduce congestion at launch areas.	70 launches/day; no increase over 1995 levels; no reserve allotment; mandatory scheduling to reduce congestion; no extended parking at launch areas; rafts that require special facilities phased out; no picnic stops.	115 launches/day; 10% increase over exisiting permitted levels or 64% increase over 1995 levels; no reserve allotment; mandatory scheduling.	Jackson Lake Dam to Pacific Creek: no use; Pacific Creek to Deadmans: 14 launches/day; Deadmans to Moose: 56 launches/day; Swabackers to Moose: 11/day; Moose to Wilson: 5/day.
• Guided Fishing	No use limits.	14 launches/day.	13 launches/day; no extended parking at launch areas.	17 launches/day; no extended parking at launch areas.	Jackson Lake Dam to Pacific Creek: no use; Pacific Creek to Deadmans: 6/day; Deadmans to Moose 8/day; Moose to Wilson: no restrictions.

	Alternative One	Alternative Two	Alternative Three	Alternative Four	Alternative Five
• Private	No use limits.	No use limits until standards are exceeded.	No use limits until standards are exceeded; Oxbow Bend except main channel closed.	Same as Alternative Two.	Same as Alternative Two.
Launch Areas	Dredging not to exceed 25 cubic yards.	Dredging to exceed 25 cubic yards, individual permit will be requested from Army Corps.	Same as Alternative One.	Same as Alternative Two.	Same as Alternative Two.
• Jackson LakeDam	Existing conditions.	Remove parking adjacent to river.	Same as Alternative Two.	Same as Alternative Two.	Same as Alternative Two.
• Cattlemans	Existing conditions.	Remove most of bridge; develop accessbile launch; improve parking delineation; improve site distance for entering main highway.	Remove bridge , launch site and access road. Restore to natural condition.	Same as Alternative Two.	Same as Alternative Two.
• Pacific Creek	Further engineering and hydrology studies needed.	Same as Alternative One.	Same as Alternative One.	Same as Alternative One.	Same as Alternative One.

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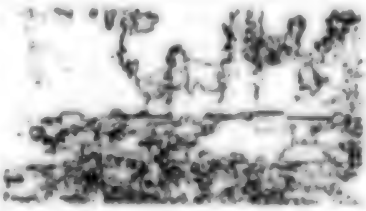
	Alternative One	Alternative Two	Alternative Three	Alternative Four	Alternative Five
• Deadmans	Existing conditions.	Use patterns unchanged; better delineation of parking; slight widening of approach.	Same as Alternative Two.	Same as Alternative Two.	Same as Alternative Two.
• Moose	Existing conditions.	Existing conditions.	Existing conditions.	Existing conditions.	Existing conditions.
Commercial					
Passenger Meeting Points	Existing conditions.	Existing conditions.	Existing conditions.	Passengers may not be met on NPS lands, but may be met at lodging concession facilities.	Passengers may not be met on NPS lands, but may be met at lodging concession facilities.
Commercial Launch Times & Locations	Existing conditions.	Existing conditions.	Commercial scenic float trips assigned specific launch times and locations.	Commercial scenic float trips assigned specific launch times and locations.	Commercial scenic float trips assigned specific launch times and locations.
Commercial Parking at Launches	Existing conditions.	Existing conditions.	No long term parking by scenic float trips.	No long term parking by scenic float trips or guided fishing trips.	No long term parking by scenic float trips or guided fishing trips.

PART FIVE, INDICATORS, STANDARDS & MONITORING



PART FIVE: INDICATORS, STANDARDS AND MONITORING

This section of the plan discusses the concept of carrying capacity, describes what measures will be used to ensure that river conditions remain in compliance with the desired future conditions and what methods will be used to monitor conditions on the river. In addition, this section outlines future research needs as they relate to the river corridor. The indicators and standards presented here are preliminary, will be field tested further during the summer of 1996, and revised as necessary. It is the goal of this plan to identify indicators and standards that will ensure that desired future conditions are met. Due to staffing and funding constraints, these measures need to be easily monitored and adequate indicators of overall river conditions.

Carrying Capacity

In the past, the question of how much public use is appropriate in a national park has been framed in terms of visitor "carrying capacity." The Park Service is required by law to address carrying capacity in planning for parks: the 1978 National Parks and Recreation Act (P.L. 95-625) requires each park to include "identification of and implementation commitments for visitor carrying capacities for all areas of the unit." (Arches VERP Plan, 1995).

For the purposes of this plan, carrying capacity is defined as "the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions that complement the purposes of the park unit and its management objectives"

In other words, for the purposes of this plan, carrying capacity is interpreted not as a prescription for numbers of people, but as a prescription for numbers of people appropriate for desired ecological and social conditions. Measures of appropriate conditions replace measures of maximum sustainable use often used in relation to other types of carrying capacities (e.g. range capacity for domestic ungulates of wildlife habitat) (VERP, 1995).

A major premise of this planning process is that desired conditions, which are qualitative in nature, must be translated into objective measurements through the use of indicators and standards. It is important to remember that standards do not represent goals or desired conditions. Standards represent the trigger points that define when conditions become unacceptable.

When indicators show that visitor experience and resource conditions do not meet these standards, management actions will be taken to restore acceptable conditions.

Social Indicators and Standards

Indicator:	The number and frequency of boats encountered on the river.
Standard:	Seeing five or more other scenic boats while floating the river.
Action:	Permit system will be developed for private users, better scheduling spacing of launch times. Institute not launching till previous boat is out of view for private users.

Indicator:	Congestion at parking areas and launch ramps; time spent waiting to launch.
Standard:	80% of the parties will have to wait no longer than 15 minutes.
Action:	Staff launch sites, schedule staggered launch times.

Resource Indicators and standards

Indicator:	Occupancy and productivity of bald eagle nests.
Standard:	No downward trend over five years.
Action:	Identify problem. May initiate time restraints to keep visitors from floating through nest areas in the early morning and late afternoon. May also monitor for contaminants such as DDT derivatives in the aquatic environment.

Indicator:	Occupancy and productivity of Great Blue Heron rookeries.
Standard:	No downward trend over five years.
Action:	Identify problem.

note: bald eagles and great blue herons were chosen as a primary resource indicator for the following reasons:

They are at the top of the food chain.
Ongoing monitoring efforts and good historical data exists to monitor trends.
They are sensitive to human disturbance.
They are a good indicator of the relative health of the fishery.

Monitoring

Continued monitoring will be necessary in order to determine if river conditions are consistent with the desired future conditions outlined in the plan. Listed below are actions that will be accomplished on a yearly basis following completion of this plan:

- *Bald Eagle Monitoring*

Known bald eagle territories will continue to be monitored on a biweekly basis from late March to mid-June when young are from 5-7 weeks old. All young within Grand Teton NP will continue to be banded with aluminum color-coded and USFWS bands by Park biologists. Periodically, new areas will be surveyed for bald eagle occupancy, and reports of new activity investigated. Trends over time in occupancy and productivy will be monitored.

- *Vegetation Monitoring*

Periodic monitoring of the river access areas will be conducted to determine if excessive trampling is occurring and social trails are forming. If this is the case, then measures such as formalizing trails, fencing and revegetation efforts will be considered.

- *Water Quality*

There has been an ongoing water quality monitoring effort by the National Water Quality Assessment Program. This program monitors for phosphorus levels, total nitrates, turbidity, summer water temperatures and contaminants.

- *Concessions Operations*

Concessions operations will be evaluated annually to insure that the public is provided with satisfactory service and that management objectives are met.

- *River Use*

All aspects of river use including commercial operations, private use, shoreline fishing and hiking will be monitored to insure that the desired future condition, indicators and standards are not violated.

- *Snake River Management Plan*

In order for the river management program to be effective and responsive to change, there will be an ongoing effort to identify, evaluate and correct problems and deficiencies. As new information becomes available through the monitoring process and future research, the River Management Plan may be modified. Policies found to be inconsistent with the protection of natural and cultural resources will be revised as needed. Changes that affect use allocations will not be implemented without allowing time for public review and input and for concessionaires to adjust their operations. To assure that the River Management Plan remains a functional document, it will be reviewed annually by staff involved in river operations.

Research Needs

As a result of this study, the following future research needs were identified as nnecessary to better understand both the river system and how visitor use impacts natural resources:

- Improve the understanding of how recreation activities affect wildlife, and how this activity is connected to populations and communities.
- Develop a specific study to gather information on the river otter population and how visitors effect that population.
- Determine how lack of flushing flows due to the dam effect cottonwood communities.

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APPENDIX ONE, COMMERCIAL OPERATING GUIDELINES

OPERATING PLAN

GUIDED INTERPRETIVE FLOAT TRIPS AND FISHING TRIPS

OF

GRAND TETON NATIONAL PARK

AND

JOHN D. ROCKEFELLER, JR. MEMORIAL PARKWAY

Concession Permit No. ________

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I. INTRODUCTION

This Operating Plan shall serve as a supplement to the Concessions Contract between (Concessioner) (hereinafter referred to as "Concessioner") and the National Park Service (hereinafter referred to as "Service").

This Operating Plan generally describes operations authorized under the contract between the Concessioner and the Service. This Operating Plan does not amend the Contract nor alter the rights and liabilities of the parties to the Contract. In the event of any apparent conflict between the terms of the Contract and this Operating Plan, the terms of the Contract will prevail. This plan will be reviewed annually and will remain in effect until superseded or amended.

II. MANAGEMENT, ORGANIZATION AND RESPONSIBILITIES

A. Concessioner

1. (Concessioner) will direct this concession operation. The Company/Corporation shall employ a manager, who carries out the policies and directives of the Service as well as those of the concession in the operation of the authorized concessions facilities and services in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway. To achieve an effective and efficient working relationship between the Concessioner and the Service, the Company/Corporation must designate one representative who has full authority to act as a liaison in all concession administrative/operational matters.

2. The manager will employ a staff with the expertise to operate all services authorized under the concessions contract.

3. The manager will furnish the Service with an initial list identifying key concession management and supervisory personnel and their job titles, with updates as changes occur.

B. National Park Service

1. The Superintendent manages the total park operation, including concession operations. The Superintendent carries out the policies and directives of the Service, including management of concessioner contractors. Through Service representatives, the Superintendent reviews, supervises, and coordinates concession activities within the Park. Monitoring concession contract compliance includes evaluating all concession operations and services, reviewing and authorizing all rates, improvements to facilities and construction, and protection of cultural and natural resources.

2. The Chief of the Concessions Management Division (Chief) coordinates the functions of other Service divisions relating to concession operations. The Chief makes recommendations on all aspects of the concessioner's operation to the Superintendent. He/she ensures necessary evaluations and/or inspections are performed, including those required by the United States Public Health Service (USPHS), Regional Safety Officer (including fire inspections), and the Concessioner Review Program. The Chief ensures all concessioner rates are approved based upon current comparability studies or applicable guidelines. He/she has line authority from the Superintendent to make field decisions, which pertain to the concessions operation, and acts as liaison between the Concessioner and Superintendent.

   Concessions Management Specialists and Concessions Assistants review and coordinate the Concessioner's day-to-day activities. They review and evaluate operational and maintenance activities; rates, services, and schedule changes; equal employment

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opportunity and affirmative action plans; advertisements; construction proposals; annual financial reports; insurance coverage; and any other contract requirements.

3. The Assistant Superintendent supervises and manages the functions of all divisions, as they relate to the overall park operation. This position has delegated authority and assists the Superintendent by making recommendations on all aspects of park management and serves as Acting Superintendent during the absence of the Superintendent.

4. The Regional Safety Officer monitors the Concessioner's Loss Control program to ensure it meets all applicable standards.

5. The Park Sanitarian monitors all food and beverage services, solid waste disposal, water, and waste water systems to ensure adherence to all applicable public health standards.

6. The Chief Ranger initiates, reviews, supervises, and coordinates the activities of personnel who provide visitor services and protection functions. District Rangers, the Fire Management Officer, and the Law Enforcement Officer serve as the direct line of communication to the Concessioner on matters related to fire management, law enforcement, safety, prescribed fire, search and rescue, emergency medical services and resource protection.

7. The Chief of Interpretation acts on behalf of the Superintendent in matters pertaining to interpretation, environmental education, museum services, and public affairs. The Interpretive Division will work with the Concessions Management Division to evaluate/monitor concession interpretive activities. District Interpreters provide interpretive programs for the visiting public and serve as the direct line of communication to the Concessioner about interpretive matters, including concession staff training. The Public Affairs Officer will

work with the Concessions Management Division to coordinate media relations and activities with the Concessioner.

8. The Chief of Maintenance acts on behalf of the Superintendent in matters pertaining to maintenance and supervises the activities of the Facility Managers. The Facility Managers, District Maintenance Supervisors and staffs provide day-to-day supervision over all maintenance activities and operations, including buildings and utilities, roads and trails.

9. The Chief of Science, Resource Management, Planning and Compliance acts on behalf of the Superintendent in all matters pertaining to natural and cultural resources management such as air and water quality monitoring, vegetation management, fish and wildlife management, historic compliance, etc. Long-range planning is under the purview of this position.

10. The Administrative Officer acts on behalf of the Superintendent in matters related to fiscal management associated with the concession activities, including billing for payment of franchise fees, utilities, and personal services provided by the Service to the Concessioner.

III. CONCESSION PERMIT ADMINISTRATIVE REQUIREMENTS

A. Operational Evaluations

1. The services authorized by the Contract will conform to the evaluation standards set forth in the National Park Service Concessions Guideline (NPS-48) and with this Operating Plan.

2. The Service and the Concessioner shall separately inspect and monitor concession facilities and services with respect to Service policy, applicable standards, authorized rates, safety, public health, impacts on cultural and natural resources, and

visitor concerns. Annually and on a periodic basis throughout the year, the Service will evaluate all services and facilities operated by the Concessioner to ensure public safety and health, identify maintenance and operating deficiencies, and ensure reasonable rates and satisfactory services and accommodations for the general public within assigned areas of responsibility.

3. The Superintendent's representative(s), normally the Concessions Management Specialists, will conduct periodic inspections of concessioner facilities and services to ensure conformance to operational standards established by NPS-48. Location managers will be contacted at the time of evaluations so that a representative of the Concessioner can accompany the Service evaluator.

4. The Concessioner is responsible for developing and following a comprehensive safety program. The Service will make unannounced inspections and evaluations of the safety program on a random basis.

5. The Park Sanitarian shall conduct periodic food service evaluations without prior notice.

6. The Service reserves the right, in accordance with the Permit, to enter the Concessioner's operations at any reasonable time for any inspection or when otherwise deemed necessary.

7. The Concessioner must be responsive to dates assigned for correction of deficiencies and abatement plans for correction of identified deficiencies. The Concessioner will meet with Service officials to schedule and prioritize correction of deficiencies resulting from these inspections..

B. Rates

1. The Concessioner will submit written requests for all rate increases at least 45 days prior to antic-

ipated implementation date. Requests for rate changes will be processed as expeditiously as possible. Should special conditions require a quicker than normal response, the Concessioner will clearly explain these conditions in writing in the request.

2. The Service will approve, disapprove, or adjust rates and will inform the Concessioner of the reason for any disapproval or adjustment within 45 days of the rate request submittal.

3. The Concessioner will prominently post all rates for goods and services provided to the visiting public.

C. Reduced Rates for Government Employees and Others

Government employees on official business and others (not family members) on park-related business, as designated by the Superintendent, will receive reduced rates for lodging and transportation. National Park Service personnel conducting evaluations under the concessioner review program will receive reduced rates for services being evaluated (with the exception of food service).

D. Schedule of Operation

The Concessioner will annually submit a written schedule of proposed opening and closing dates and operating hours for all concession operations for the Superintendent's approval prior to implementation. The Service will give reasonable notice of any scheduled changes that it may initiate. Weather and visitation may cause specific dates of operating seasons to fluctuate; these dates, however, will be agreed upon and approved by the Service, prior to implementation.

E. Staffing and Employment

1. The Concessioner will hire a sufficient number of employees to ensure satisfactory services.

2. The Concessioner will establish hiring policies which will include appropriate background reviews of applicants for employment. The Concessioner will not hire any person known to have an outstanding warrant for arrest and will make reasonable efforts to secure this information prior to hiring new employees.

3. All employees dealing with the general public shall be clean, neat, and professional in appearance. Employees will project a hospitable, friendly, helpful, positive attitude, be capable and willing to answer visitors' questions, and provide visitor assistance.

4. The Concessioner shall have an affirmative action plan, as required by law, and shall post the plan in the office and work area.

5. The Concessioner shall not employ in any status a Service employee, his/her spouse, or minor children of Service employees without the Superintendent's approval. The Concessioner shall not employ in any status the spouse or children of the Superintendent, Assistant Superintendent, Chief of Concessions Management, Concessions Management Specialists, Safety Officer, or Public Health Sanitarian.

6. Drivers of trucks or passenger carrying vehicles shall have a valid operator's license for the size and class of vehicle being driven. They shall also meet any additional requirements established by Wyoming for the vehicle driven or passengers carried.

F. Training Program

1. The Concessioner will provide employee orientation and training and will inform employees of park regulations and requirements, which affect their employment and activities while residing and working in Grand Teton National Park. A National Park

Service representative may participate in scheduled orientation sessions.

2. The Concessioner will provide adequate, applicable training to each employee prior to job assignments and working with the public.

3. The Concessioner will design and provide interpretive training for all employees who provide interpretive and/or informational services. The Service will work closely with the Concessioner to refine the methods of preparing and conducting effective interpretive programs. The Service will evaluate interpretive visitor services to ensure appropriateness, accuracy, and the relationship of interpretive presentations to park themes.

IV. OPERATING REQUIREMENTS

A. THE PERMIT AUTHORIZES THE CONCESSIONER TO CONDUCT SCENIC INTERPRETIVE RIVER FLOATS AND/OR GUIDED FLOAT FISHING TRIPS ONLY ON THE SNAKE RIVER -- NO AUTHORIZATION FOR SCENIC FLOATING OR GUIDED FISHING ON ANY OTHER PARK WATERS --NO SUBCONTRACTING FOR SERVICES IS PERMITTED.

B. DEFINITIONS: As it pertains to this permit, a SCENIC INTERPRETIVE RIVER FLOAT TRIP provides the visitor with the opportunity to enjoy a float trip experience. The views from the river are interpreted in such a manner that, along with other information given, an understanding and appreciation for the Snake River, Grand Teton National Park, John D. Rockefeller, Jr., Memorial Parkway, and the surrounding area is developed. GUIDED FISHING TRIPS are defined as float trips with the primary purpose of fishing, as opposed to scenic viewing.

C. Use Limitations

1. Operating Season - Summer months, basically June through September. Scenic float trip launch limitations apply for the period June 10 through September 15. Trips are primarily conducted during the daylight hours.

2. Scenic Float Trips - Each permittee has a unique contract with differing numbers of authorized scenic float trip launches; designated launch and takeout points; meal stops; passenger-meeting points, etc. as shown in Appendix 1. This number may be adjusted during the term of the contract.

3. Guided fishing trips - There is currently no limitation on the number of guided fishing trips which may be conducted under an authorized contract. The Superintendent may impose such limitations any time conditions warrant such action.

   Trips are limited to four (4) passengers per raft/boat. Fishing gear must be provided at no additional charge for at least 50% of raft passengers.

   Concessioners are required to telephone the Park Dispatch Office at 739-3301 or send a fax to the Park Dispatch Office at 739-3304, prior to launching guided fishing trips, with the following information: name of guide; time and place of launch.

D. Launches, Takeouts, Stops

1. Each contract has designated places for launching, meal stops (if permitted) and takeouts as shown in the Contract and Operating Plan.

2. Fishing trips, if authorized, may launch and takeout at any NPS established launch point.

3. Stopping at any other points along the river is not permitted except for fishing trips or emergencies. (This includes stopping on the water or dragging anchor).

4. Eagle nest closures prohibit ALL stopping, standing, or slowing for a distance of 1/2-mile in any direction from the nest during the period February 1 through August 15, each year.

5. The concessioner will not embark on any commercial float trips until after the previously-launched crafts (or through crafts) OF OTHER CONCESSIONERS are out of sight. This applies to scenic floats only -- not guided fishing trips.

6. To keep launch ramps clear for use, operators must use the ramps for launch and retrieval ONLY. Rigging of equipment on the ramp is not permitted.

E. Launching or retrieval

1. Launching or retrieval at any ramp is on a first-come, first-served basis, (first arrival of passengers) EXCEPT in the case of the lower ramp (with the hoist) at Moose Landing. The Grand Teton Lodge Company has first priority on use of the lower ramp, having installed and maintained the hoist. Other permittees may use the ramp when it is not in use by the Grand Teton Lodge Company. The Grand Teton Lodge Company is expected to expeditiously utilize the lower ramp for retrieval whenever possible.

2. Launching rafts prior to arrival of passengers and later walking passengers past others already waiting defeats the intent of this policy. Launching must be on a first-come, first-served basis of passengers. All groups must wait their turn to launch.

3. Parking/Road Use:

    a. All commercial users will use the Moose service road (north end of the maintenance building) for access to the back parking area.

    b. Vehicles and trailers should be parked in such a manner to allow adequate space for through traffic and for other operators to rig their equipment in the center section of the back parking area.

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c. Company vehicles with or without boats and/or trailers parking or stopping in the front "float trip parking" area for longer than 10-minutes is strongly discouraged. No rigging of equipment is permitted in this area.

d. Concessions scenic or boat trailers are not allowed on the Teton Park Road or the Moose-Wilson Road. Special Use Permits may be issued for one time events.

F. Equipment

1. A list of all rafts, frames, trailers, and passenger-carrying vehicles must be provided to the Concessions Management Office each season prior to beginning operation.

2. Vehicles - All vehicles used to transport passengers must be maintained in a safe operating condition and comply with all state and federal regulations.

3. Watercraft:

   a. Scenic rafts must be readily identifiable as the concessioner's through numbering pattern, logo, color, etc. Scenic rafts must bear numbers that are a minimum of 3" high, and are placed in a visible location. Fishing rafts are not required to have company identification and numbers.

   b. If used personally, scenic rafts and fishing rafts must have a park boat permit.

   c. Rafts must have a minimum of two (2) compartments in the main tube or chamber.

* d. No two consecutive chambers may be leaking internally or at least 75% of chambers must be airtight

* e. All valves and patches must be airtight with no external leaks.

* f. All lifeline "D" rings must be securely fastened.

* g. Lifeline ropes must be in good condition (as minimum, 3/8" cotton or 1/4" nylon with no knots except at the joining point.

4. Frames:

a. Company identifying numbers must be placed on each scenic raft frame readily visible for inspection.

b. Frame must be securely fastened to the raft.

* c. Frame must be solid, without weld cracks or weak points.

5. Oar Locks and Rowing Pins:

a. Pins and/or clamps must be securely fitted and straight.

* b. Rowing pin sleeves must be in place and serviceable.

c. Wooden rowing blocks must be serviceable.

6. Oars:

* a. Blade must be serviceable in size and condition.

* b. Extra oar or paddle must be in each raft.

7. Personal Flotation Devices (PFD):

* a. All passengers on scenic trips must wear properly fitted and buckled USCG approved Type I or V PFD's for the duration of the trip.

Flotation collars on Type V PFD's must not be removed, tucked into the collar, tied down or made unserviceable in any other manner.

b. A person or child, who cannot be properly fitted with a Type I or Type V PFD, should not be permitted to float. This generally applies to children under 4 years of age.

c. Boatmen on scenic trips must wear a USCG approved PFD for the duration of the trip. The PFD may be a Type III, Type I or Type V. It must be properly fitted and buckled. Flotation collars on Type V PFD's must not be removed, tucked in, tied down, or made unserviceable in any other manner.

d. All boatmen/guides and passengers on guided fishing trips must wear a USCG approved PFD during the time they are in the boat. Boatman/guides and passengers may wear Type III, Type I or Type V. PFD's must be properly fitted and buckled. If Type V PFD's are worn, flotation collars must not be removed, tucked in, tied down, or made unserviceable in any other manner. Boatmen/guides and passengers are not required to wear a PFD while fishing from shore.

* NOTE: THE ITEMS MARKED WITH AN ASTERISK ARE CONSIDERED CRITICAL. RANDOM INSPECTIONS WILL BE MADE THROUGHOUT THE SEASON. IF EQUIPMENT FAILS TO MEET MARKED CRITERIA (*), IT WILL BE PULLED FROM SERVICE IMMEDIATELY (see also, sec.5.b.1.)

8. Rain Gear

a. Each raft will carry sufficient raincoats, slickers, plastic or fabric tarps to ensure passenger comfort during periods of inclement weather.

b. The quantity of rain gear must be equivalent to the number of persons on board.

c. The rain gear must be stored in an accessible manner and must be in serviceable condition.

9. First Aid Supplies

a. Each raft shall carry a waterproof first aid kit.

b. The following items are recommended as a minimum: Bandaids; waterproof matches; sunburn lotion or zinc oxide; one arm splint; one eye dressing kit; four triangular bandages; 3" wide adhesive tape; one 3" ace wrap; one 5" Kurlex or battle dressing; two 2x2, two 3x3, and four 4x4 gauze compress pads; wool blanket, or other means of providing warmth, and one operable flashlight.

G. Safety

1. Safety Belts

a. Drivers and guides must use seat belts while transporting passengers.

b. Drivers or guides must advise passengers to use their seat belts while riding in vehicles equipped with approved restraint systems.

2. Inspections

a. Rafts, frames, and other equipment may be inspected by Ranger personnel at any time. If equipment fails to meet criteria outlined in Section 4, it will be pulled from service immediately until corrections have been made and the equipment is reinspected.

b. Raft capacities have been established for each raft size. Capacities for new equipment must be determined by Ranger personnel prior to use and that limit must be adhered to. Changes in the type of watercraft used which results in substantial changes in capacity, must have prior approval of the Superintendent and may result in adjustment of daily launch quotas.

c. Any raft or frame damaged in an accident must be inspected by Ranger personnel prior to further use.

3. River Hazards: Hazards or obstacles in the river should be called to the attention of the Chief Ranger. In cases of obvious danger, or if no safe alternate route exists, the Park may remove the hazard. The public and concessioners are not permitted to do so.

4. Accidents: All accidents must be reported to a Park Ranger or Park Headquarters at the end of the trip. Accidents include collision, upset, property damage, passengers falling into the water, fire, personal injury or death.

5. Safety Orientation

a. Prior to departure, boatmen will demonstrate proper PFD use and fit to all passengers and make a physical inspection to assure that each PFD is securely fastened and is of appropriate size.

b. A safety message must be given which explains recommended procedures to follow in the case of an accident; proper positioning in raft; what to do if a passenger falls into the water; what to do if the boatman falls into the water; and explain concessioner's procedures for retrieval of a passenger from the water.

H. Personnel Qualifications

1. All boatmen and/or fishing guides must possess a current American Red Cross first aid card or equivalent, and a current CPR card (either ARC or American Heart Association).

2. Boatmen/guides who have been certified in first-aid and/or CPR during the past 18 months, but whose certification has expired, may lead trips for 30 days pending recertification. Documentation must be provided when the boatman begins work and when he/she is recertified.

3. To qualify as a boatman for scenic trips, one must make at least ten (10) trips on the Snake River within Grand Teton National Park. All qualifying trips will be under the supervision of a qualified boatman and the apprentice will have partial or total control of the boat. **These trips will be logged and certified (by the permittee) on the permittee's letterhead, and provided to the Concessions Management Office for NPS approval.** Proof of current first aid and CPR certification must be furnished along with the trip log. A boatman who has been certified by one permittee can work for other companies without further qualifying.

4. Prior to operating each season, a written list of all boatmen and/or fishing guides, documenting their first aid and CPR certification and the expiration dates of each must be submitted to the concessions office. These lists may be updated whenever changes warrant by phone with a written follow-up.

5. All boatmen/guides must be able to swim, in the case of an emergency.

I. Resource Protection

1. The Concessioner agrees to comply with all park rules and regulations and is particularly sensitive to the protection of the flora and fauna. The Concessioner will ensure that his employees and

clients are made aware of these rules and regulations as appropriate.

2. Only in the case of extreme emergency will commercial operators enter areas closed by the Superintendent.

3. Meal sites shall be left in a clean condition with fires properly extinguished. All provisions of the Bear Management Plan apply to sanitation at these sites.

4. Fishing guides are encouraged to land fishermen in varying locations to avoid establishing trails and eroding landing/launch sites.

J. Interpretation

1. The Superintendent, through a designated representative, will work closely with the concessioner in producing and maintaining an effective interpretive program.

2. Periodic evaluations will be made by Park representatives to ascertain whether the approved interpretive program is being adhered to.

K. Sanitation

1. Trash and garbage: Each raft will provide containers suitable for stowing trash, garbage and other litter which cannot be deposited at Deadman's Bar. The National Park Service will provide a dumpster at Moose for disposal of garbage and litter.

2. Toilets will be provided and maintained by the National Park Service at Pacific Creek and Deadman's Bar #2. Concessioners are required to provide and maintain their own toilet systems at other meal sites, subject to approval by the Superintendent. Waste from these systems will be disposed of in accordance with procedures established by the Superintendent.

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L. **Food Service** - If authorized, the permittee is subject to the following requirements, as well as all those of the U.S. Public Health Service. Employees handling food may be required to attend Public Health Service training.

1. Personnel

   a. If an individual has a sore throat or a respiratory or diarrheal illness, they shall not participate in the preparation of food or cleaning of dishes.

   b. Hand washing must be established as a routine practice by anyone who engages in food preparation. Illnesses such as Salmonellosis and Shigellosis are spread via the fecal/oral route.

   c. Individuals with open sores or burns should not be engaged in food preparation unless a food glove is worn.

2. Food Temperatures

   a. The refrigeration temperature of perishable food should be 41 degrees F or less. A thermometer must be located in the ice bins to determine the temperature.

   b. There should be drainage plugs in the ice bins and the water should be drained frequently.

3. Cleaning of Dishes, Utensils and Food Handling Equipment

   a. All dishes, cookware and other utensils should be washed utilizing a 3-step method:

      First container -- soap and hot water;
      Second container -- clear, hot rinse water;
      Third container -- sanitizer; this may be a bleach or iodine solution

b. Air dry and store the items in a clean, dry location.

c. Sheath knives MUST NOT be used in food preparation.

M. Drinking Water

1. Enough drinking water obtained from a chlorinated source should be carried to ensure the comfort of passengers for the duration of the trip.

2. The water container should have a closed top, be tightly sealed, and be smooth and cleanable.

3. A spigot should be placed at the bottom of the container and water dispensed from the spigot only; dippers should never be used as drinking cups.

V. **INSURANCE**: Permittee must provide proof of adequate insurance coverage to the Concessions Management Office prior to beginning operations. Specific requirements are listed in Section 8 of the contract.

VI. **NONDISCRIMINATION**: Requirements outlined in Exhibit A of the CONTRACT.

VII. STATISTICAL REPORTING

A. Visitor statistics: The concessioner will furnish, by the second day of each month, a report stating the number of trips, dates and total passengers carried for the respective operation.

B. Fishing statistics must be reported separately from scenic float statistics.

C. Reporting procedures: These figures may be phoned or faxed to the Concessions Mangement Office (by the second day of the month) and followed by the report form. A supply of report forms will be provided by the Concessions Management Office.

VIII. HUMAN ILLNESS REPORTING

Information on all human illnesses, whether employees or guests, is to be promptly reported to the Service's Public Health Officer through the Concessions Office. This information, along with other information received, will be evaluated to help identify outbreaks of illness associated with contaminated water or food sources, or caused by other adverse environmental conditions.

IX. REPORTS REQUIRED BY THE PERMIT

A. Annual Financial Report: Due as specified in contract.

B. Valid Certificate of Insurance: Must be on file in Concessions Management Office.

X. VISITORS' ACKNOWLEDGMENT OF RISK

The concessioner may require clients to sign an acknowledgment of risk form prior to the trip. All such forms must comply with National Park Service requirements.

XI. LOSS CONTROL PROGRAM

A. Consistent with the Occupational Safety and Health Act of 1970 and the "National Park Service Loss Control Management Program" Guideline NPS-50, the concessioner will provide a safe and healthful environment for all of its employees and visitors.

B. The concessioner will develop, maintain, and implement a documented safety program ("Loss Control Plan"), as outlined in NPS-48, Chapter 34. An initial submittal and request for approval of this plan will be made to the Superintendent within 120 days of the execution of the contract.

XII. LOST AND FOUND POLICY

Finders shall be instructed to take items to NPS Moose Headquarters, Permits Office to be further managed by NPS.

XIII. INTEGRATED PEST MANAGEMENT

The control of pests by chemical and other means is subject to park approval. Specific problems can be referred to the park's Division of Science, Resource Management, Planning and Compliance.

XIV. COMPLAINTS

A. The Service will send complaints or comments regarding Concessioner facilities to the Concessioner for investigation and response in a timely manner. The Concessioner will provide a copy of the response to the Superintendent. A copy of the Service's response will be forwarded to the Concessioner.

B. In order to initiate valid and responsive visitor comments, the following notice will be prominently posted at all Concessioner cash registers and check-in/payment areas:

> This service is operated by Concession Name _____, a Concessioner under contract with the U.S. Government and administered by the National Park Service. The Concessioner is responsible for conducting these operations in a satisfactory manner. The reasonableness of prices is based on comparability. Prices are approved by the National Park Service based upon prices charged by similar private enterprises outside the Park for similar services with due consideration for appropriate differences in operating conditions.
>
> Please address comments to:
>
> Superintendent
> Grand Teton National Park
> P.O. Box 170
> Moose, Wyoming 83012

XV. ADVERTISEMENTS/PUBLIC INFORMATION

A. All promotional material must be approved by the Superintendent prior to publication, distribution, broadcast, etc. Advertisements must include a statement that the Concessioner is authorized by the NPS, Department of the Interior, to serve the public in Grand Teton National Park. Brochure changes and layout should be submitted to the Superintendent for review at least 30 days prior to projected need/printing dates. The Superintendent will make every effort to respond to minor changes to brochure texts within 15 days. Longer periods may be required for major projects.

B. All brochures, advertising, literature, and other materials shall accurately reflect the services authorized and conducted under this permit. Literature distributed in the park shall not include information on commercial activities conducted outside the park. Brochures will be withdrawn if found to be inaccurate.

C. When used, advertisements for employment must contain a statement that the company is an equal opportunity employer.

Dated at Grand Teton National Park this ________ day of ________ ____________, 19___.

CONCESSIONER	NATIONAL PARK SERVICE
____________________________	____________________________
	Jack Neckels Superintendent Grand Teton National Park
Title: ______________________	
Date: ______________________	

APPENDIX TWO, WY GAME & FISH PROPOSAL

DRAFT

WYOMING GAME AND FISH DEPARTMENT; FISHERIES MANAGEMENT CREW 10.

PROPOSED RESTORATION PROJECT - UPPER BAR BC SPRING CREEK

The Snake River Cutthroat Trout population in the upper section of the Snake River (Moose - Jackson Lake Dam), has a limited amount of suitable spawning channels (or spring creeks) available. This is best demonstrated by the fact that some trout travel as far as 29 miles downriver from the confluence of the Buffalo Fork River to spring creeks located near the confluence of the Gros Ventre River to spawn.

There is potential for loss of prime spawning area, primarily Blacktail Spring, by encroachment from the Snake River in the future. This loss could be offset by some degree if spring creeks, such as Upper Bar BC Spring, were developed to their maximum spawning capacity. The value of Upper Bar BC Spring, to the Snake River fishery, should be of long term as it is situated on a bench above the floodplain, whereas, Blacktail Spring is located within the floodplain.

Prior to the dedication of Grand Teton National Park, a fish hatchery was constructed on the East Fork of Upper Bar BC Spring by the United States Bureau of Fisheries. Dams were constructed on the East Fork, near the hatchery site, to provide rearing ponds. There is evidence that some of the channel above and below the rearing ponds was widened for some unknown purpose. After the hatchery was abandoned, the dams were left intact and sediment continued to accumulate in the ponds. In 1984, in cooperation with Teton Park, Wyoming Game and Fish Department personnel used a backhoe to remove three of the dam structures, excavate sediments and expose gravels to a limited extent. The work was accomplished on the section of creek adjacent to and below the hatchery site.

The Wyoming Game and Fish Department recommends that the project be continued on the East and Main Forks in an attempt to establish a spawning run similar to that in the lower reach of the West Fork. This will involve removal of the last dam structure, which was left intact due to the last landowner's request; removal of sediments; narrowing the channel to a natural width; excavation of natural gravels or placement of commercial washed gravels where natural gravels can not be reclaimed; placement of overhead cover (trees) for protection of spawning fish and escape cover for fry.

If all of the recommended types of treatment are agreeable to all cooperating parties, the project cost is estimated to be less than $ 10,000.

UPPER BAR BC SPRING - FISH HABITAT ENHANCEMENT PROPOSAL

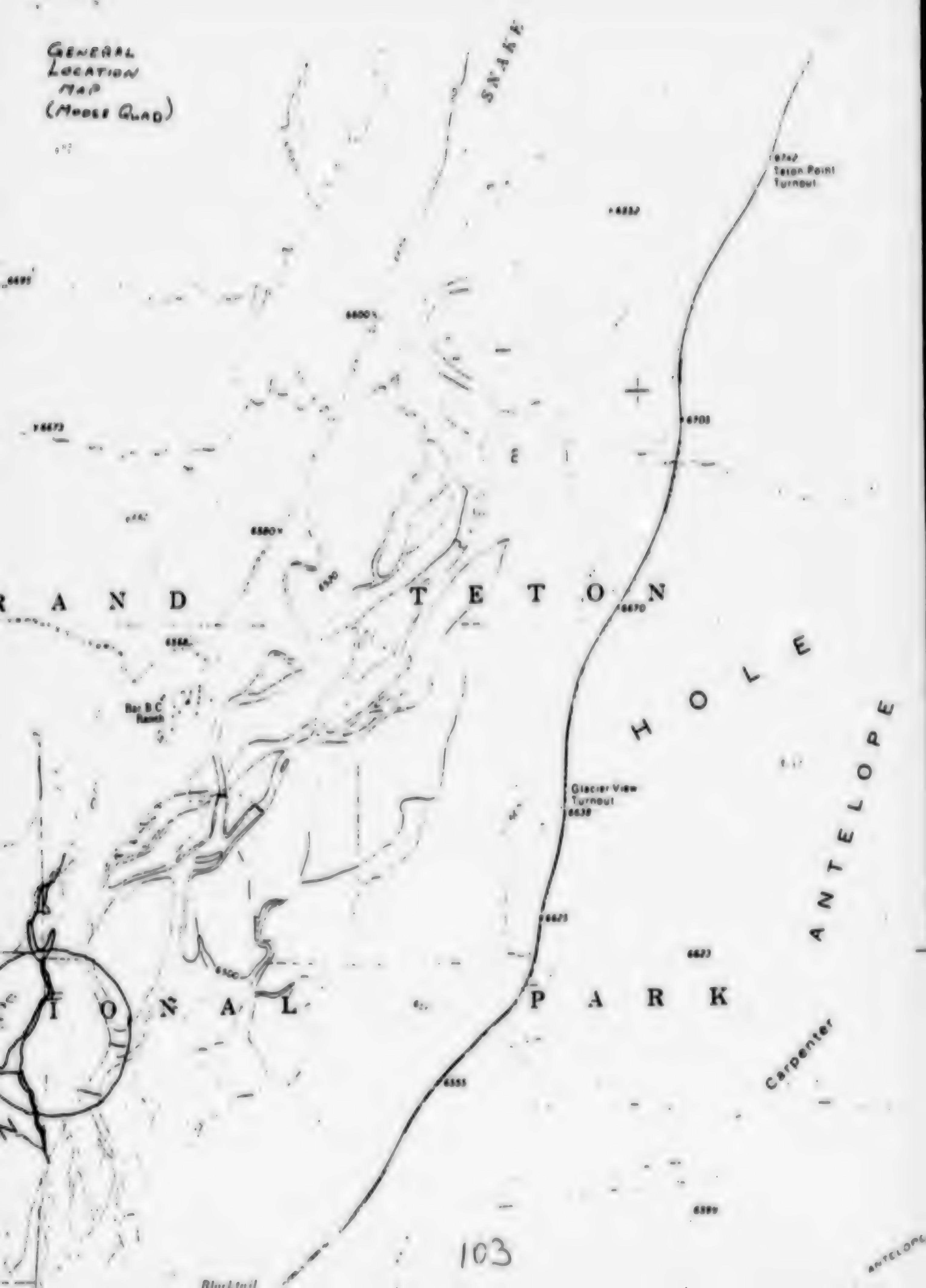
EAST (HATCHERY) CHANNEL

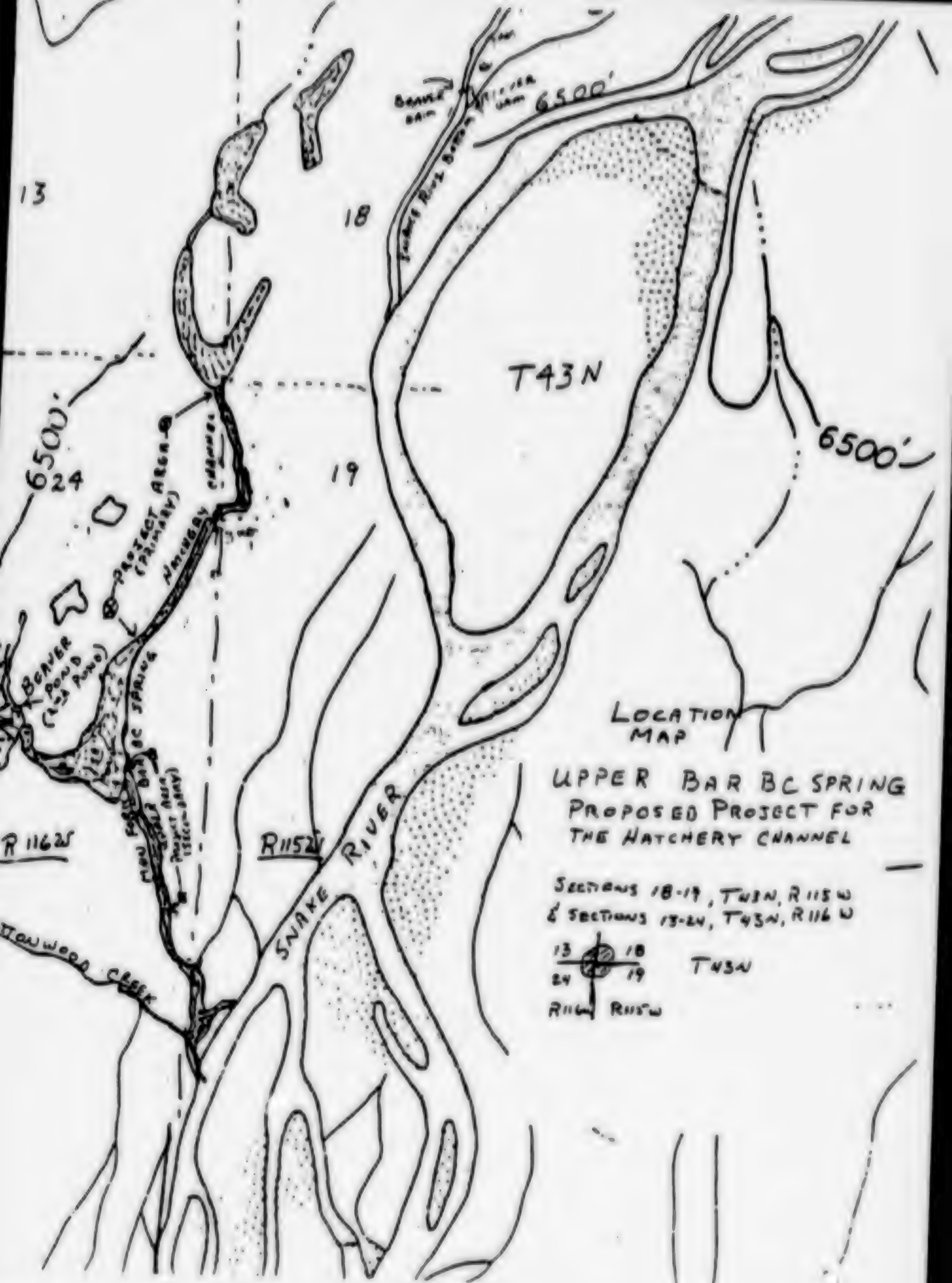
Site No.	Proposed Treatment	Purpose
1	Breech Structure	Remove barrier, flush sediment and consolidate channel.
2	Add Fill	Narrow Channel to maintain a velocity of 1.5 to 3.0 feet per second (fps).
3	Excavate a pool - Add cover	Create a secure resting pool.
4	Enhance Gravel - Fill to consolidate channel	Increase suitable spawning area. Maintain velocity at 1.5 - 3.0 fps.
5	Excavate a pool - Add cover	Create a secure resting pool.
6	Enhance Gravel	Increase suitable spawning area.
7	Enhance Gravel	Increase suitable spawning area.
8	Excavate a pool	Create a secure resting pool.
9	Enhance Gravel	Increase suitable spawning area.
10	Add Fill	Narrow Channel to maintain a velocity of 1.5 to 3.0 fps.

LOWER (MAIN) CHANNEL

11	Add Fill	Narrow Channel to maintain a velocity of 1.5 to 3.0 fps.
12	Add Fill	Narrow Channel to maintain a velocity of 1.5 to 3.0 fps.

GENERAL LOCATION MAP (MOOSE QUAD)

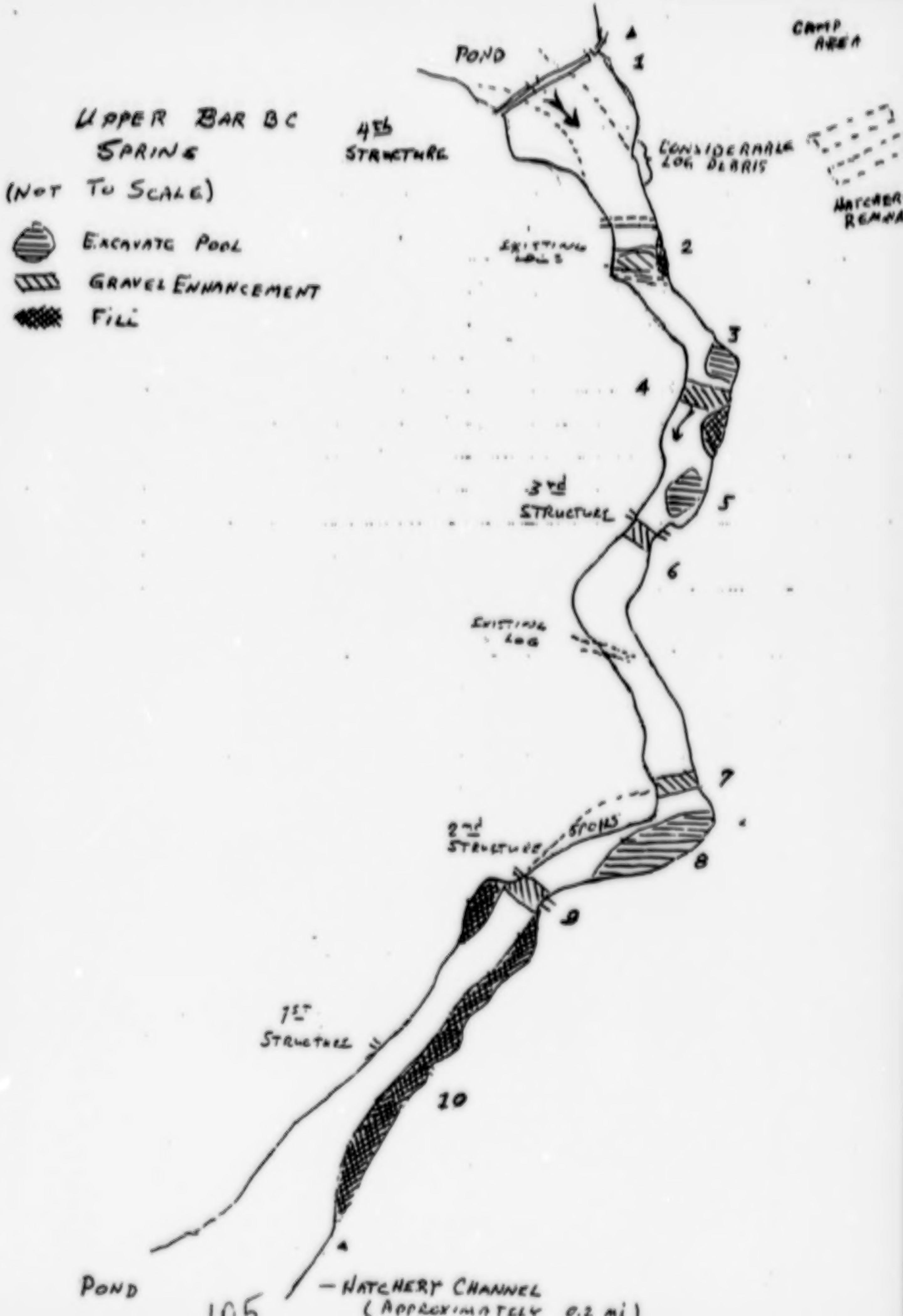




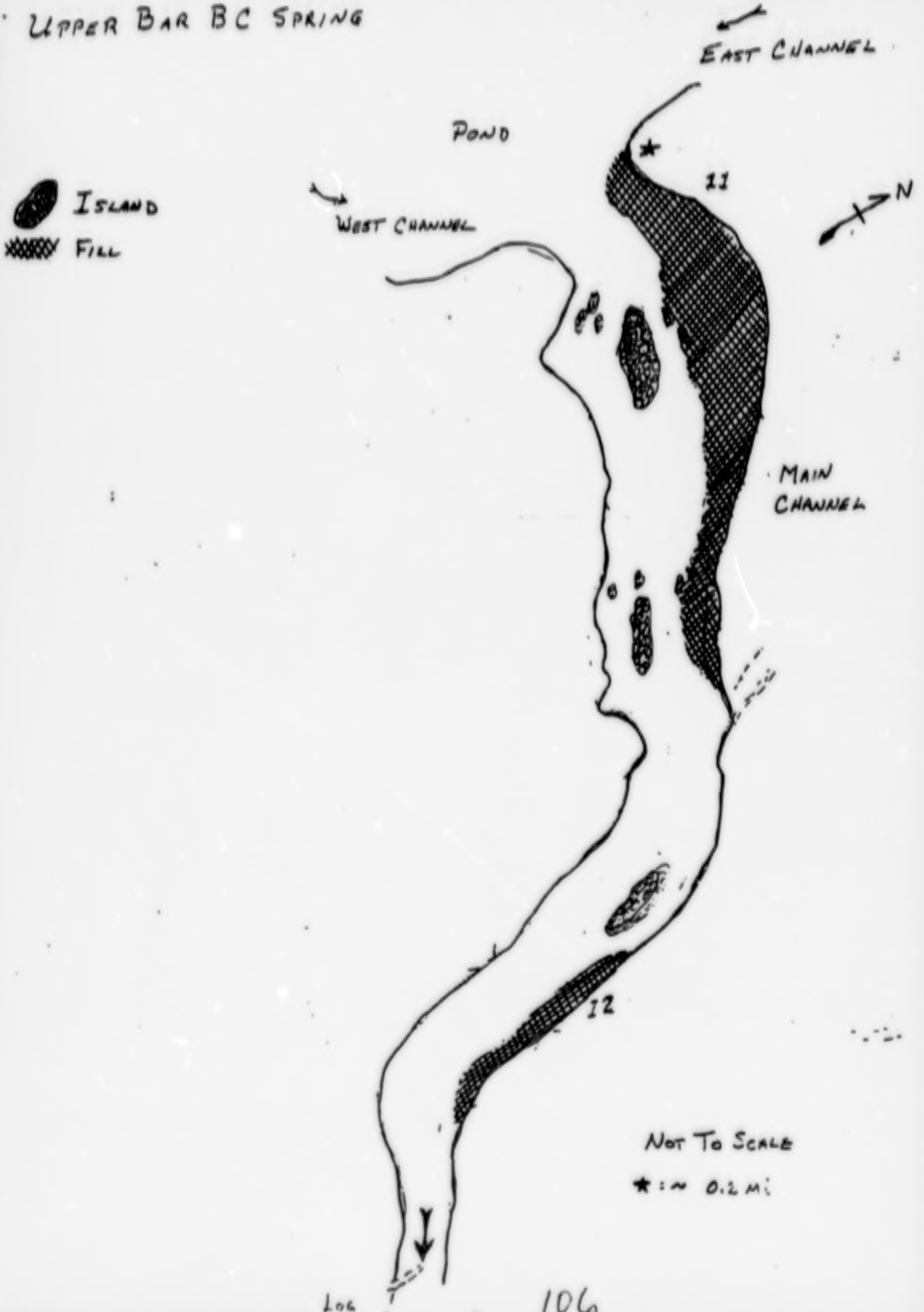
LOCATION MAP

UPPER BAR BC SPRING
PROPOSED PROJECT FOR
THE HATCHERY CHANNEL

SECTIONS 18-19, T43N, R115W
& SECTIONS 13-24, T43N, R116W


UPPER BAR BC SPRING
(NOT TO SCALE)
EXCAVATE POOL
GRAVEL ENHANCEMENT
FILL
POND
CAMP AREA
1
4th STRUCTURE
CONSIDERABLE LOG DEBRIS
HATCHER
REMNA
EXISTING LOGS
2
3
4
3rd STRUCTURE
5
6
EXISTING LOG
7
GROINS
2nd STRUCTURE
8
9
1st STRUCTURE
10
POND
- HATCHERY CHANNEL
(APPROXIMATELY 0.2 mi)

UPPER BAR BC SPRING



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END

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